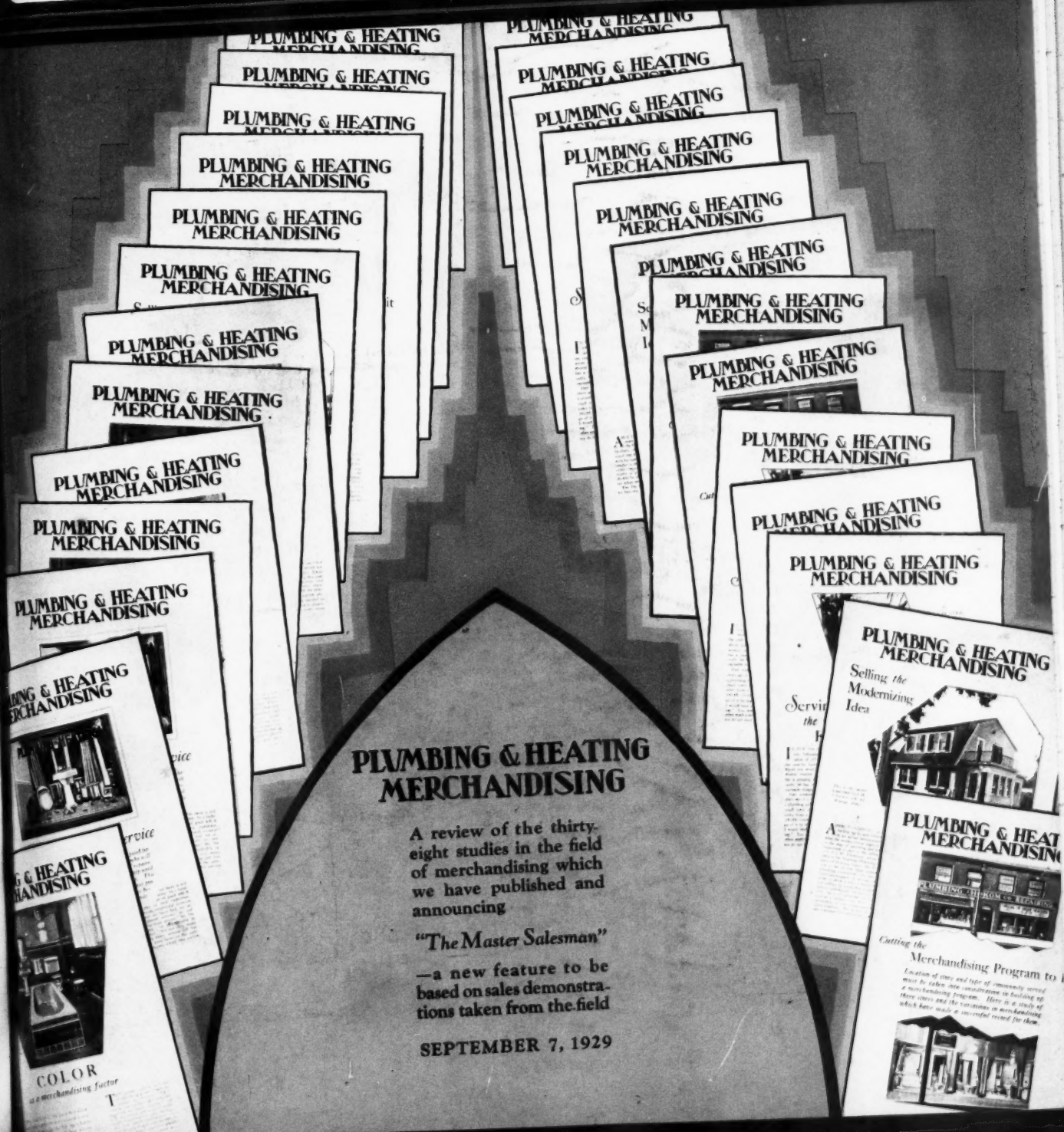
DOMESTIC ENGINEERING



PLUMBING & HEATING MERCHANDISING

A review of the thirty-eight studies in the field of merchandising which we have published and announcing

"The Master Salesman"

—a new feature to be based on sales demonstrations taken from the field

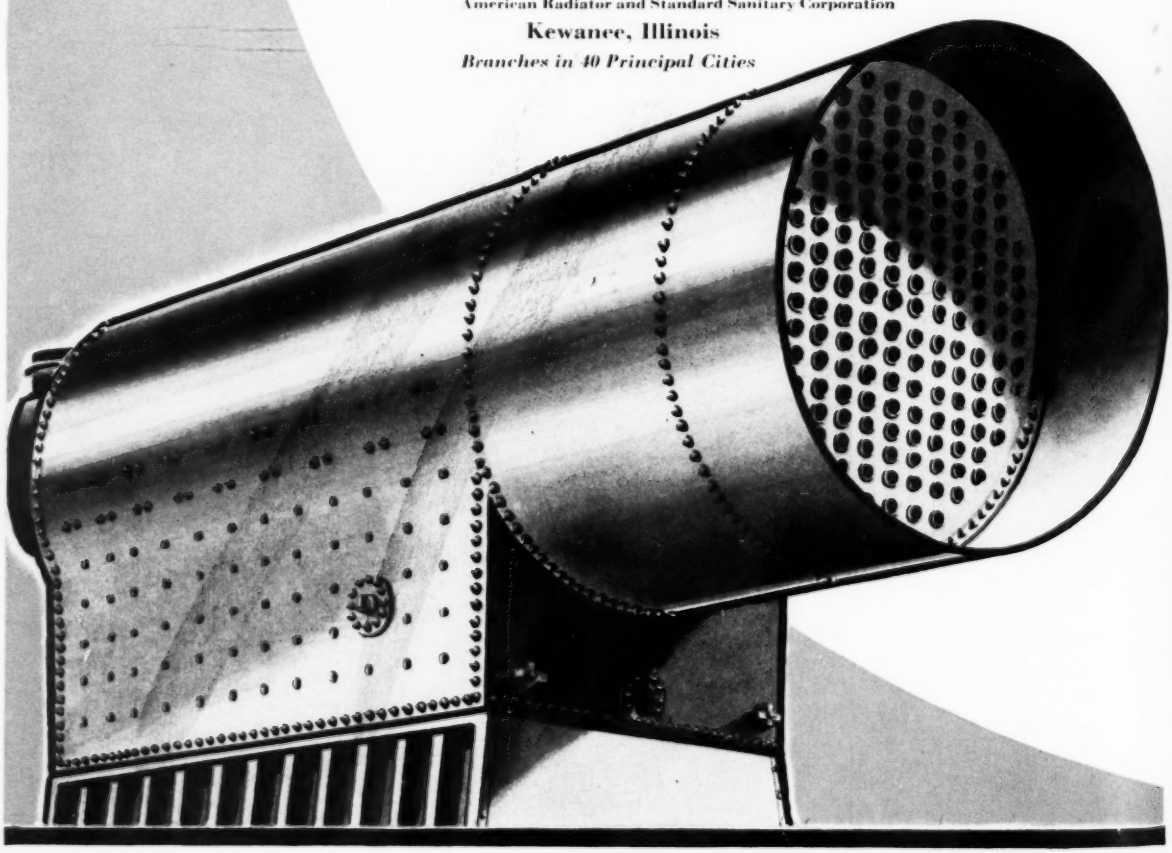
SEPTEMBER 7, 1929

KEWANEE

STEEL RIVETED BOILERS

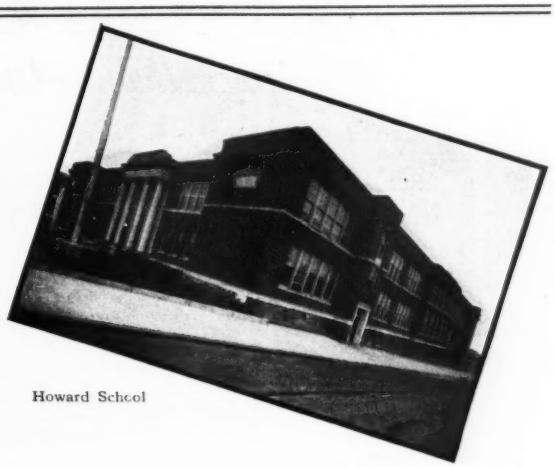
Look at a Kewanee from any angle and its greater strength and dependability is quickly apparent. We could *build and sell them for less.* But to do so we would have to leave out some of that extra strength, dependability and efficiency which makes Kewanee today's best boiler investment.

KEWANEE BOILER CORPORATION
division of
American Radiator and Standard Sanitary Corporation
Kewanee, Illinois
Branches in 40 Principal Cities



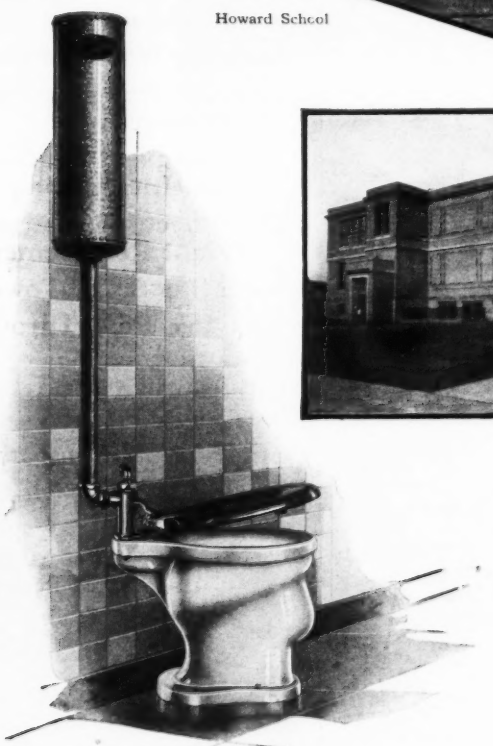
Remember and Recommend the VOGEL SELFLUSH *Number Ten*

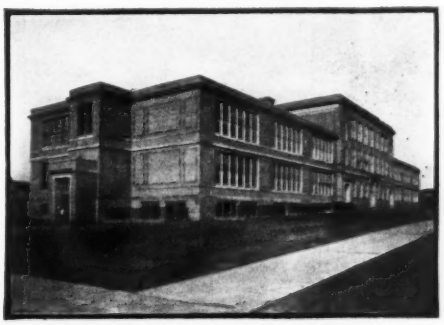
Oak Grove School



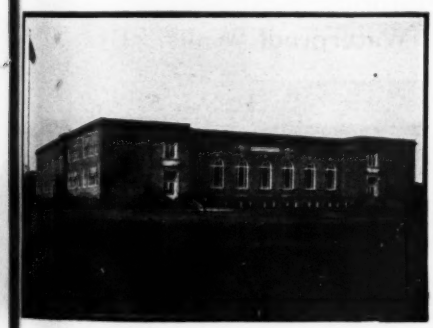
Howard School

Some Delaware Schools in which VOGEL SELFLUSH Closets have been installed.





George Gray School



Thomas F. Bayard School

See inside back page for Coldie and Frostie—the VOGEL Cold Test Twins.

for installation in

schools and institutions of learning, factories, plants, comfort stations, theatres, moving picture houses, waiting rooms—every place where a durable seat-action closet is to be installed.

Has behind it more than 20 years of experience in the making of seat-action closet combinations.

Folders are available—imprinted with your name and address.

This closet is being extensively advertised to your customers in publications which they read, and a heavy, direct-by-mail campaign is being carried on.

Work with us for bigger and better profits and more of them.

JOSEPH A. VOGEL COMPANY

Wilmington, Del. St. Louis, Mo.

for Schools, Institutions, Factories and Plants

DOMESTIC ENGINEERING

Plumbing & Heating Contracting and Merchandising

Established 1889

Vol. 128, No. 5 Whole No. 1899 September 7, 1929

More Than 20,000 Copies of This Issue Printed and Distributed

Published Fortnightly by
ENGINEERING PUBLICATIONS, INC.
1900 Prairie Avenue, Chicago

F. P. KEENEY,
President and Treasurer

E. DE FOREST WINSLOW,
Vice President

O. T. CARSON,
Secretary

Address all Correspondence to Chicago Office

NEW YORK OFFICE—
Rooms 1706-1707, 110 East 42nd St.

PHILADELPHIA OFFICE—
Room 1507, Finance Bldg.

PITTSBURGH OFFICE—
Room 604, Chamber of Commerce Bldg.

DETROIT OFFICE—
Room 410, Donovan Bldg.

Editorial Staff

R. V. SAWHILL, *Editorial Director*
R. HERLOV, CHAS. E. PRICE,
L. W. BRITTON, G. R. STEARNS,
JAS. E. RAMAGE, W. W. GOTHARD,
Associate Editors
R. M. STARBUCK, JR.,
Consulting Editor on Plumbing

Advertising Representatives

F. S. KING, E. G. HUTCHISON,
R. PAYNE WETTSTEIN,
WALLACE J. OSBORN, H. J. CARR,
D. M. KENNEY, ROBERT A. JACK,
R. H. PARTENFELDER,
A. T. PAPINEAU

TERMS OF SUBSCRIPTION
Anywhere in the World, $2.00 per year.
Current copies, 20c each. Back numbers, 40c each.

Entered as Second Class Matter on January 19, 1929, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879.

Copyright 1929, by Engineering Publications, Inc.

Member of Audit Bureau of Circulations.

IN THIS ISSUE

Page

Heating and Ventilating Airplanes. By Robert Johnson ... 47
Running Water on the Farm. By J. P. Schaenzer 51
Looking for Heating Trouble. By Robert R. Kenworthy ... 53
Plumbing and Heating Merchandising: A Review and Introducing "The Master Salesman." ... 55
The Effect of House Construction on Heating Plant Requirements. By A. M. Daniels ... 63
Enforcing Small Town Plumbing Regulations ... 67
Carrying Pipe Through Waterproof Walls. By Harold L. Alt ... 68
Interpreting a Plumbing Code. By R. M. Starbuck, Jr ... 69
The Heating Plant and Anthracite Sizes ... 79
Progress in the Oil Burner Industry. By C. H. Chalmers ... 82
Co-operative Plumbing Research at the Massachusetts Institute of Technology ... 85

Special Departments

Between Ourselves ... 6
Editorials ... 45
Retail Advertising Service ... 76
Legal Questionnaire ... 113
Markets—Business Reports from Large Jobbing Centers ... 145
Convention Dates ... 154
Supply News—Among Manufacturers, Wholesalers and Salesmen ... 157
The Trade—News for Plumbing and Heating Contractors ... 167
Wisconsin Plumbing Inspectors' Convention ... 178
Woman's Page ... 192
Plumbing and Heating Patents ... 201
Index to Advertisers ... 206

WOLVERINE

Beauty .... and Dependability

Glistening snow-white porcelain or silver-like chromium, Wolverine Built-In Fixtures have the beauty that so enhances a bathroom.

And built into the wall, out of sight, are fittings of the material and the exact machining that all built-in work should have.

Beauty – and back of beauty – Wolverine Dependability.

Our line of concealed Fixtures is very complete, to supply your every need.

WOLVERINE BRASS WORKS

GRAND RAPIDS WB MICHIGAN

We sell the retail plumbing trade exclusively.

Be sure and read the new feature "The Master Salesman," which is on Page 55 in this issue.

Between Ourselves

"You can create non-competitive business." — R. R. Cunningham, business economist of Cleveland.

Every man knows what it is to stand before a prospect who needs and wants plumbing or heating equipment, but who will not admit it and who finds objection after objection to buying. Our new selling feature—"The Master Salesman"—will aim at helping at just that moment.

Your Editor

WE HAVE now published thirty-eight "Plumbing and Heating Merchandising" feature sections. In this issue is the thirty-ninth, a review of some of the high lights in the previous sections. We wanted to make clear the point that there must be general merchandising—newspaper advertising, direct-mail advertising, window and store display—and that this general merchandising had for its purpose the bringing together of the contractor and his prospect. A grounding in the practices of merchandising is essential, of course; but it must be capped by a training in selling. When the prospect has been interested by all that he has seen and heard, and comes at last to the point of visiting the store or asking the contractor to call, that is the moment when salesmanship is needed. "The Master Salesman" will, in future merchandising feature sections, outline actual sales situations and then analyze them to show why the sale was made or lost. He will be glad to help contractors who are facing a difficult sales situation, or to analyze a sale that was lost so that the same mistake will not again be made.

THE third and last of the series of articles by Ara Marcus Daniels on "The Effect of House Construction on Heating Plant Requirements" is published in this issue and everyone who has read the first two articles will want to be sure and follow the series through to its finish. Type of construction has a very marked effect on heat requirements, and as heat requirements control the design and operating characteristics of the heating plant, it is to the interest of every heating contractor to inform himself on this subject.

IN THE past twenty-five years aviation has been developed from a precarious novelty to an essential unit in the country's system of transportation and communication. In the past, passengers using the air were satisfied with speed, but today they demand not only speed but also comfort. Now the leading maunfacturers of aircraft are producing transports in which are included the features of speed, safety and comfort. "Heating and Ventilating Airplanes," by Robert Johnson, is an exhaustive study of this subject.

RICHARD E. HANNA, of Cambridge, Mass., recently sent us these good words regarding DOMESTIC ENGINEERING: "We enjoy the magazine very much and always find it well worth the price. I am particularly pleased with the merchandising section and all new ideas for window display."

THE Wisconsin Society of Plumbing Inspectors met at LaCrosse, Wis., on August 26 and 27 for its annual convention and a complete report of the proceedings of the sessions will be found in this issue. A program of standardization was adopted at the meeting which it is expected will go a long way toward standardizing all local plumbing codes in the State of Wisconsin within a short time.

THE farmers of this country are desirous of securing the necessary equipment to enable them to have an abundant supply of running water in the farm home and other buildings. They realize that by having the water available at the turn of a faucet it relieves them of a great deal of drudgery and makes the farm a more pleasant place on which to live. Authorities say that the farmer is going to have a lot more money to spend after this year's harvest than he has had in some time and the master plumber has a splendid opportunity to get some business from this field. The article, "Running Water on the Farm," by J. P. Schaenzer, offers a chance to study farm water requirements.

ONE of the most interesting problems encountered in the heating field is that of chimneys and their action. In the next issue of DOMESTIC ENGINEERING there will be an article by Harold L. Alt entitled "Chimney Facts." Mr. Alt discusses a few of the important things to know about stacks and their theory of operation.

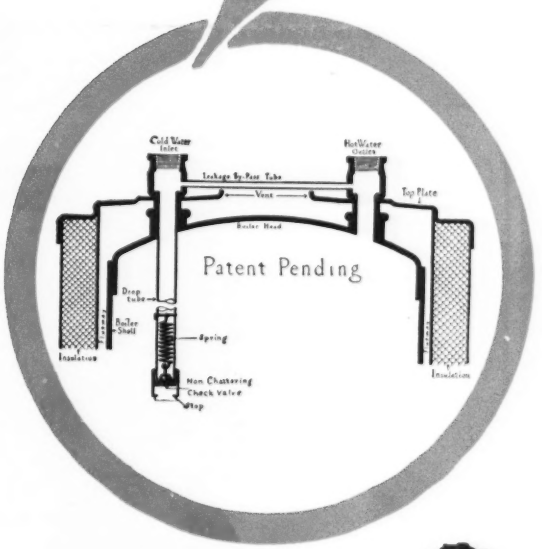
The man who is so busy that he does not have time to read his trade paper is like the man who was so busy chopping wood that he did not have time to sharpen his axe

The Only One that has It

The Faucet Leakage By-Pass

on the

EverHot AUTOMATIC WATER HEATER IS EXCLUSIVE!



It Saves Gas

otherwise wasted, due to leaking or dripping hot water faucets.

With any storage heater, it is apparent that if hot water faucets are dripping there is a constant withdrawal of water from the heater. This causes an excessive consumption of gas.

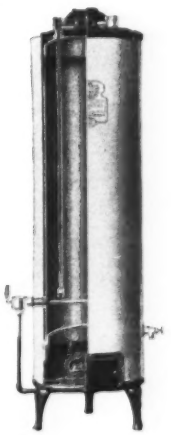
But not with the EverHot—any small stream of water such as would be passed by one or more leaking faucets does not pass through the heater at all. This is entirely taken care of by the Leakage By-Pass.

This device is simple and trouble-free—it requires no attention—it is positive in operation.

Tell your customers about it—conservatively speaking, it will save 10% to 15% of the average gas bill. Worthwhile, isn't it?

It is regular equipment on EverHot Heaters.

Sell your customers the utmost in hot water satisfaction. Sell EverHot.



The Leakage By-Pass is but one of the Superior Features of EverHot.

Build a User-Salesman Organization of Your Own

Recommend and Install the EverHot

EverHot Heater Company

5211 Wesson Ave. **Detroit, Michigan**

Jenkins VALVES ARE ALWAYS MARKED WITH THE "DIAMOND" TRADE JENKINS MARK

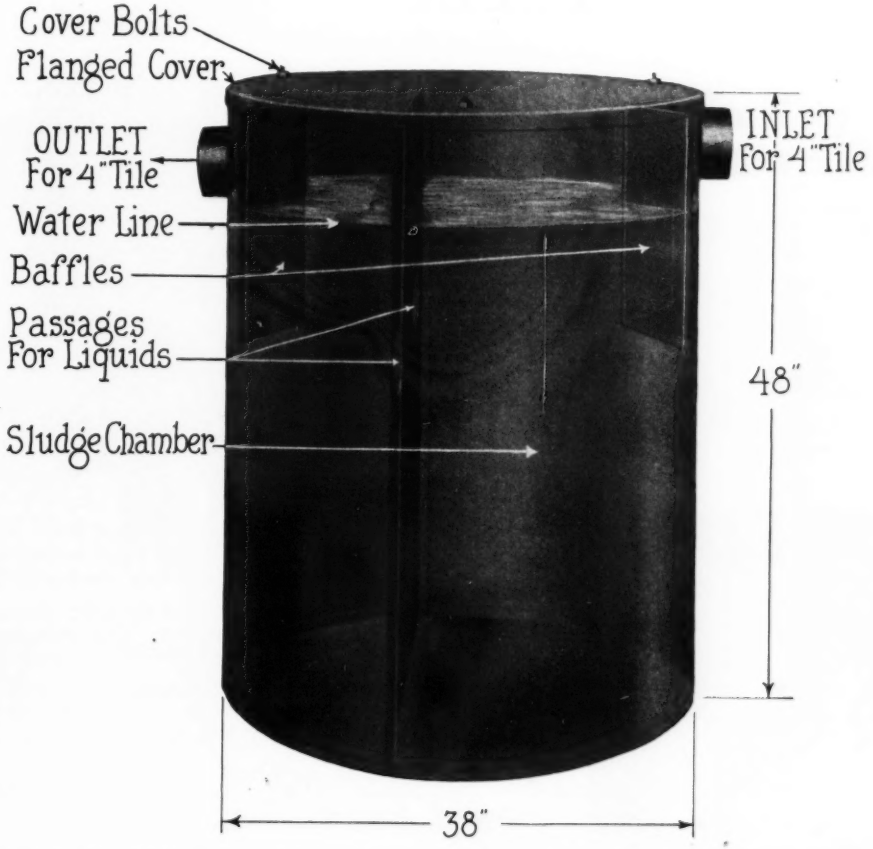
Jenkins Bros

Uniform castings contribute stamina

HIGH grade castings, characterized by an even distribution of metal, give Jenkins Iron Body Valves stamina to stand up in severe service. This Fig. 326, Jenkins Standard Iron Body Gate Valve is made flanged, or screwed. Sizes 2 to 16 inches are for 125 pounds steam or 175 pounds water, and 18 to 24 inches for 100 pounds steam and 125 pounds water. Jenkins Bros., New York, Boston, Philadelphia, Chicago . . . Jenkins Bros., Ltd., Montreal, London.

KOVEN

SANITARY SEPTIC TANKS



Septic Tank Sewage disposal can be brought up to its highest point of efficiency and convenience with Koven Sanitary Septic Tanks.

Koven Tanks are scientifically built upon advanced lines. They have in them only the finest of Blue Annealed Open Hearth Steel thoroughly coated with a special asphalt base composition.

Write for this folder showing capacities, dimensions and prices.

L. O. KOVEN & BROTHER, Inc., 154 Ogden Ave., JERSEY CITY, N. J.

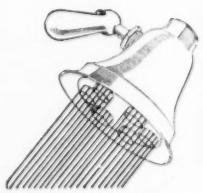
HERE IS A NEW PROFITABLE FIXTURE

. . . so amazing and ingenious that it SELLS ITSELF

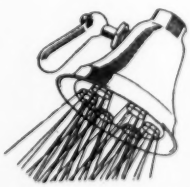
K 3395 Patent Applied For

IT will sell *you* the instant you turn the lever. It will sell every one of your customers as soon as they see its amazing features. For a turn of this lever *instantly* flushes away all clogging sediment from this new Speakman Self-cleaning Shower Head. A turn of the same lever gives any kind of spray desired . . . from a gentle misty shower to a driving downpour.

A turn of the lever sluices all sediment away



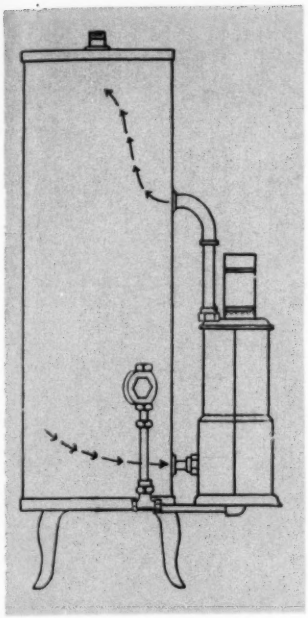
Another turn of the lever gives a normal spray



Or you can adjust to a veritable stinging needle shower

Get a supply from your distributor. Have your journeymen show them to customers. Finished in beautiful Speakman Chromium Plate, *they are the fastest-selling replacement item that Speakman ever offered the Master Plumber!* Speakman Company, Wilmington, Del.

SPEAKMAN *Showers & Fixtures*



The "Side Arm" Heater

Cold water inlet being above sediment line, only clean water is heated. No fire under the tank means longer life and greater satisfaction.

How Many Plumbers

Are Really Giving Themselves A Square Deal

?

In your own interest, it is becoming increasingly important that you help your customers get *the most value* from their purchases. When you sell them something with which you know they will be satisfied, you have added an important asset to your business—*Good Will.*

Yet many plumbers are unintentionally failing to build for themselves the permanent *Good Will* in the sale of Automatic Storage Heaters that so surely comes with the sale of the "Side Arm" type.

In longevity of service, in the everlasting quickness of its hot water delivery, in year upon year upon year of satisfaction it gives, in its almost complete freedom from maintenance costs—*there is nothing to compare with it.*

"Side Arm" Heaters Continually Efficient.—Tank Gives Its Full Life of Service

The Side Arm heaters heat only clean water, taking it from above the sediment line, and delivering it to the top of the tank, ready to use. The tank, as furnished by Hotstream—*double extra heavy,* will last indefinitely, because there is no direct heat applied to it. The only part that can go bad is the heater coil, which can be easily and cheaply replaced at any time.

Furthermore, the "Side Arm" Automatic can be operated as a regular tank heater when it is desired to save gas, something you cannot do successfully with other types.

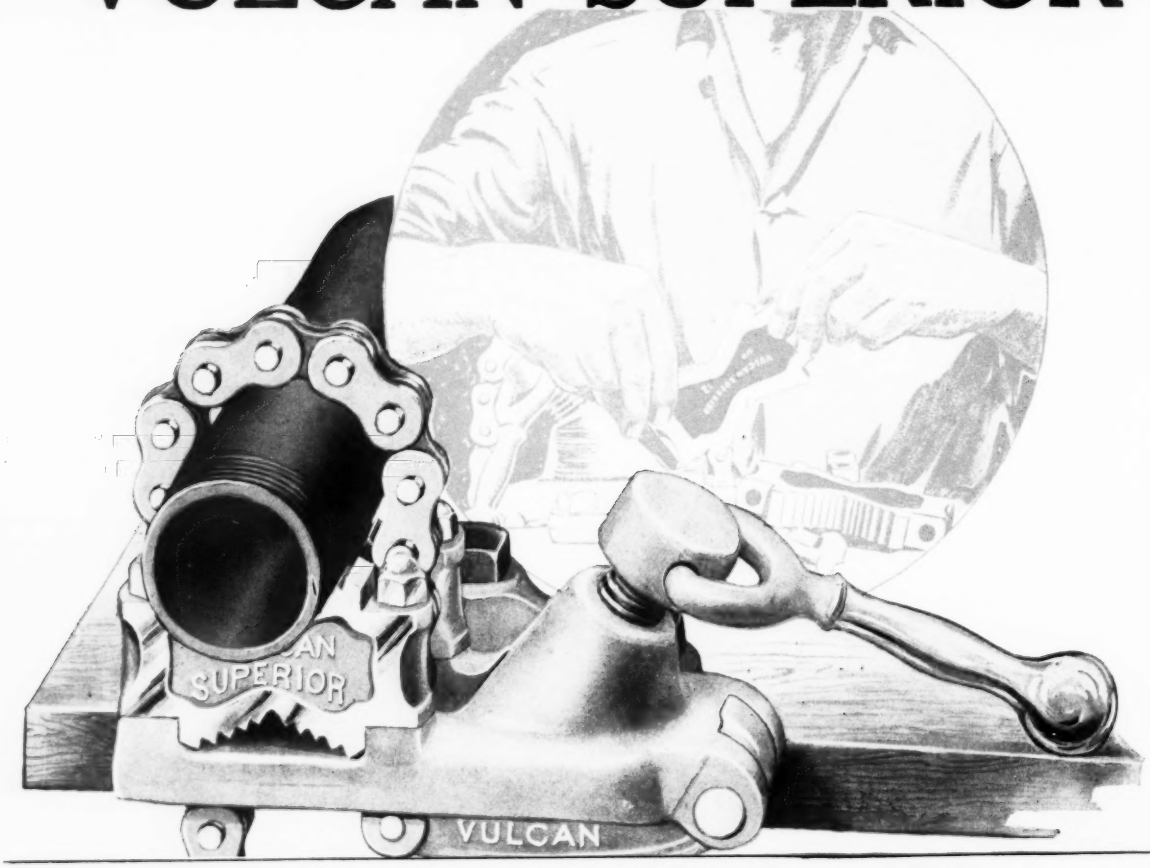
And so we say to you, if you want to sell a heater that will *stay* sold—that will give the same uninterrupted service five and ten years from today that it gives when new—that will give the *kind* of service your customer has a *right to expect* when he buys an automatic—sell the Side Arm Type.

Of course we think Hotstream Side Arm Automatics are the heaters that you should sell. There are certain definite reasons why we think so. A word from you and we will send the facts.

The Hotstream Heater Co. *"Makers of Heaters that Heat"* **Cleveland, Ohio**

HOTSTREAM
AUTOMATIC STORAGE
HEATERS

"VULCAN SUPERIOR"



The VISE *with* DOUBLE LIFE

WILLIAMS' "Vulcan Superior" is built for hard service. It's the ONLY Chain Pipe Vise having double life. When the teeth first in use grow dull, simply turn the jaws over. Then, in effect, you have a new vise. ¶And the handle ON TOP assures easy adjustment. Convenient—efficient—rapid. ¶Every part is made of tough wrought steel—not a casting on the whole job. ¶It's a great vise. You need it in your work. Two sizes for ⅛ to 4½-inch pipe. Get one today.

J. H. WILLIAMS & CO.
"The Drop-Forging People"
New York BUFFALO Chicago

4
Exclusive Features

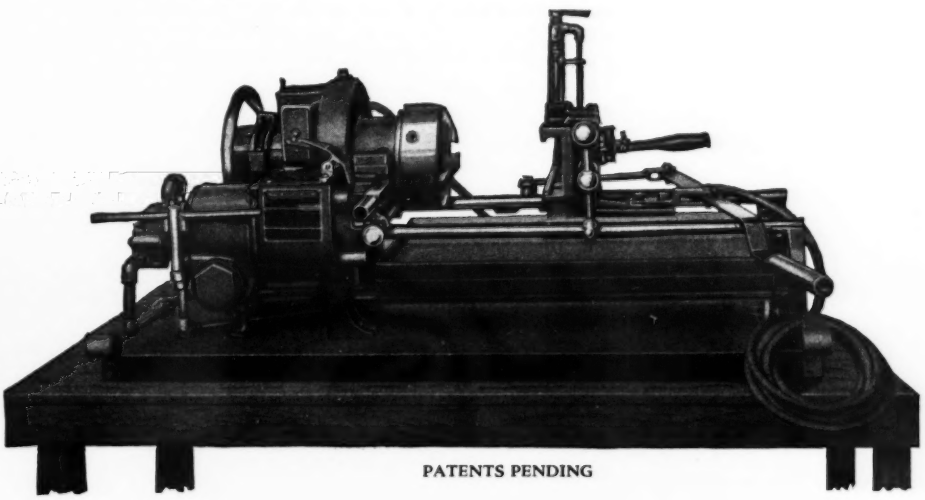
1. "Overhead" adjustment. The handle is on top—easy to operate.
2. Reversible jaws — When the teeth wear, unscrew the bolts and turn the jaws over.
3. Larger capacity — Each vise takes pipe ½ inch larger than others of similar size.
4. Finished in Chrome-plate over nickel.

WILLIAMS
SUPERIOR DROP-FORGED TOOLS
"VULCAN" SUPERIOR
CHAIN PIPE VISE

The New Nye No. 50

Threads One-Half to Two Inches with Universal Shaft Will Operate Stocks Up to 12 Inches

Strongest, Most Powerful, Light Weight Portable Pipe Machine Ever Offered to the Trade



PATENTS PENDING

{Machine Mounted on Ordinary Work Bench}
Machine with Cutting Off Tool, Reamer and Set of Square Dies ½ to 2 Inches

Low Net Price Complete
F. O. B. Chicago $291

Consider the low price of the machine complete

General Construction... Adaptability
One Horsepower Motor Equipment

This means economy and efficiency — an asset — not a liability

Let Us Give You Complete Information

THE NYE TOOL AND MACHINE WORKS
4120-30 Fullerton Avenue **Chicago, Illinois**

What Users Say About

Our city foreman, who has had twenty years' experience in cutting and threading pipe says the No. 11A Beaver is the best tool on the market. It gives us great pleasure to recommend this tool to any contractor.

Crawford and Slaten Company, Atlanta, Ga.

From reports of mechanics on the job they are very well pleased with No. 11 Beaver, both in the working of the stock, and the threads produced.

H. Kelly & Company, Minneapolis, Minn.

I have used every kind of die stock in the past forty years and the No. 11-A has certainly got them all beat a mile.

R. Wiggins, Winslow, Arizona

The No. 11A Beaver is the easiest working die stock I ever used.

W. W. Sherwood, Gordonsville, Va.

We are tickled with the No. 11A Beaver, especially after using the old type man-killers.

J. L. Grimes, Longview, Texas

Our workmen are entirely pleased with the New Beavers and say they are a great improvement.

A. C. Eynon Plbg. Company, Canton, Ohio

Our mechanics like the simplicity, and light weight of the tool and the dies produce clean, accurate and tight threads.

Fridinger & Company, Hagerstown, Md.

The
BORDEN COMPANY
WARREN OHIO.

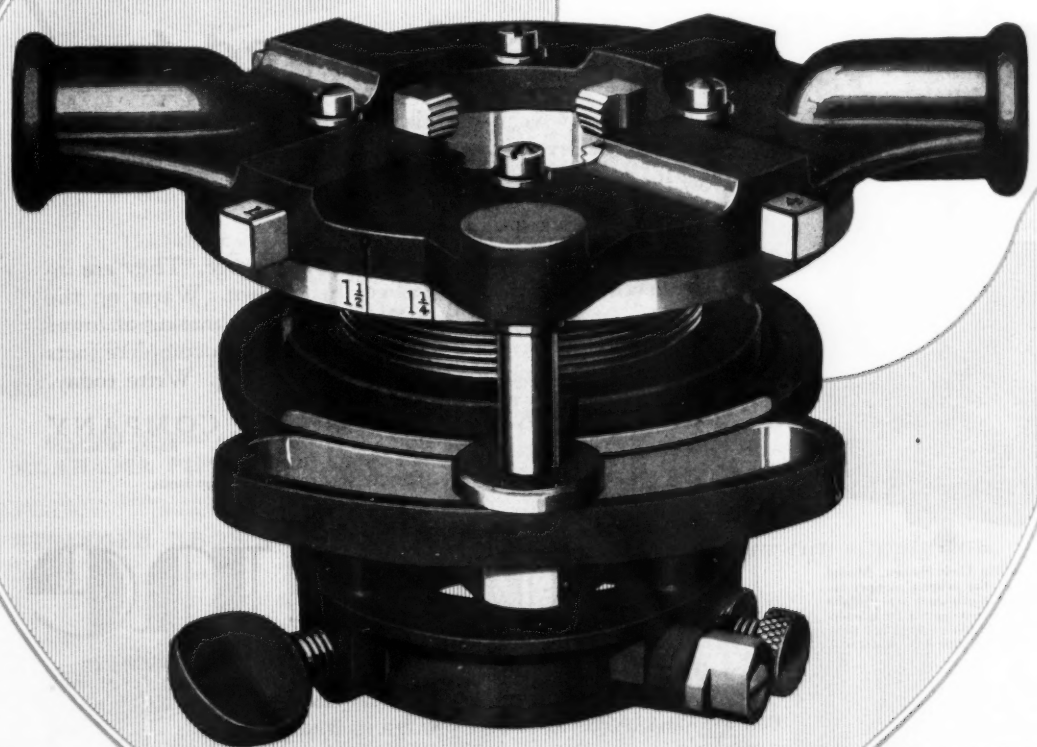
the New BEAVER

No 11 - Plain
No 11A - Ratchet
1 to 2 inch.

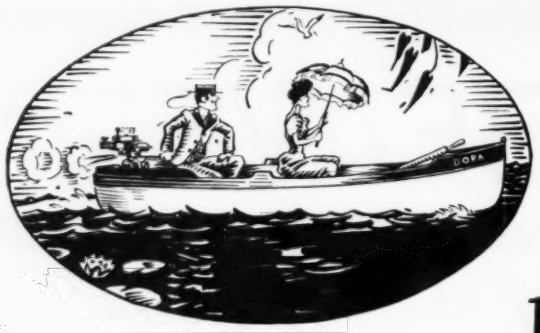
Advantages

Light-weight
Easy-cutting
Self-contained
Adjustable
Durable
Low Upkeep
Low in Price

Write for descriptive folder



TRADE MARK TRADE MARK TRADE MARK TRADE MARK TRADE MARK TRADE MARK



It's come to this!

Photo Courtesy, Evinrude Division, Outboard Motors Corporation.

HEATING has changed *too!*

ONLY a few years ago six to eight miles an hour was considered pretty speedy with the little outboard motor.

Now they turn up a thrilling 40 and more.

Industrial heating has been speeded up too!

Modine Unit Heaters have wrought this change. They are instantaneous in operation. Deliver heat down. Warm up the working zone and floors first. Provide better heating at lower installation and operating cost. Let us send you complete facts about this better method of industrial heating. Write today.

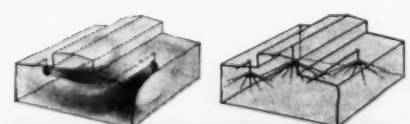
Modine Unit Heater, Model 701 — the original copper radiation equipment — weighs 130 lbs. — suspends from overhead steamline — replaces over 2 tons of pipe coil radiation.

MODINE MANUFACTURING COMPANY
1703 Racine Street *(Heating Division)* Racine, Wisconsin
Branch offices in all large cities
London Office: S. G. LEACH & CO., *Ltd.*, 26-30 Artillery Lane.

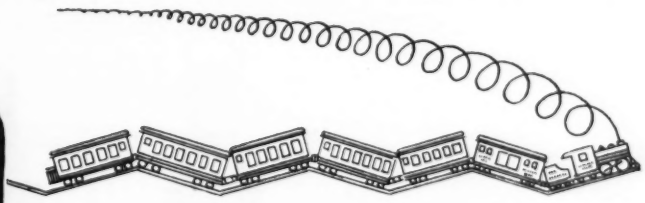
Modine *Unit* HEATER

A MODINE Product

FOR STEAM, VAPOR, VACUUM, HOT WATER HEATING SYSTEMS



HEAT AS YOU LIGHT



THE GREATEST IMPROVEMENT *in soil pipe in 50 years*

If railroad tracks were laid without regard to expansion, trains would run as shown above. And expansion is an equally serious problem in soil, waste and vent lines. ***Yet, until the arrival of EXPAN-HUB there was no real solution.***

EXPAN-HUB is the finest soil pipe that can be made. On top of that it has one feature that is actually the greatest improvement in 50 years —**the Compressible Gasket**—which is revolutionizing the soil pipe industry.

This feature takes care of all contraction and expansion, thereby preventing buckling of the soil stack and assuring permanently gas-tight joints.

In every type and size of building—from Skyscraper to Bungalow—EXPAN-HUB solves every soil pipe problem.

Your wholesaler can supply you.

Consider these Features of EXPAN-HUB

Extra thickness at hub adds strength, reducing breakage, when caulking, to a minimum.

This extra thickness is carried down to the pipe, tapering off a few inches below the hub.

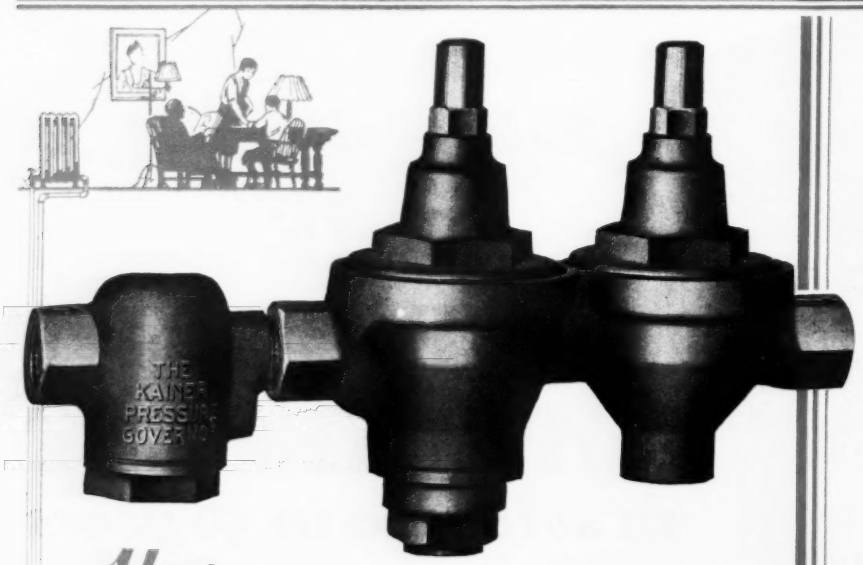
EXPAN-HUB can be immediately recognized by its brilliant orange band, on which is printed the name EXPAN-HUB.

MANUFACTURED AND SOLD BY

ALABAMA PIPE COMPANY
Anniston, Ala.
342 Madison Ave. New York, N. Y. — 122 So. Michigan Ave. Chicago, Ill. — 1749 Sacramento St. San Francisco, Calif.

STRINGER BROS. CO., Inc.
1100 W. 38th St. Chicago, Ill. — Gadsden, Ala. — 128 Sidney St. Cambridge, Mass.

FOR EVERY HOT WATER HEATING SYSTEM



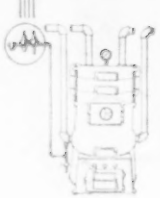
Use Kainer Specialties *to Insure Satisfaction*

The KAINER Pressure Governor is a compact, single unit that may be installed on any hot water heating system, old or new, securing the following advantages:

- Reduces the cost of a hot water layout.
- Eliminates expansion tank and fittings (with dangers of freezing or overflowing).
- Removes a big source of heating troubles and makes a better job.
- Simplifies installation.
- Saves your time and your customers' money.
- Increases your profits and builds good will.
- Speeds up circulation and increases heat transmission.
- Reduces fuel consumption.

The KAINER Pressure Governor is unequalled for either new jobs or remodelling. An attractive, quick-selling item that allows a generous margin of profit on every sale. It is easy to sell and stays sold.

Write for Special Circular showing List Prices



KAINER & COMPANY
CHICAGO
761-771 MATHER STREET
Manufacturers

KAINER
Pressure Relief Valve
Furnished in two models for various pressures. For use on domestic range boilers and hot water heating systems.

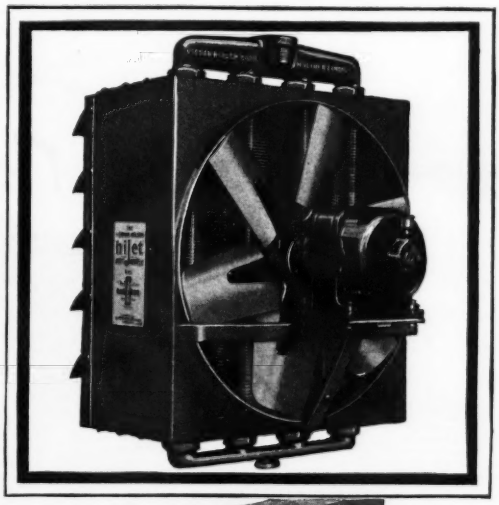
KAINER
Pressure Reducing Valve
Installing this valve on old or new systems consisting of tank and relief valve only, makes the system fully automatic.

KAINER
Filter
Prevents particles of rust, dirt and scale from fouling the valve seats, insuring continuous, trouble-free operation.

KAINER
Sylphon Regulator
Assures even water temperature. Prevents boiling and loss of fuel.

KAINER
Pressure Gauge
Should be used on all closed systems.

RESULTS···YOUR CUSTOMER *pays for them···the* hiJet *assures them*



For the economical distribution of heat in
Factories
Railroad Shops
Roundhouses
Warehouses
Mills
Garages
Gymnasiums
and all industrial buildings, as well as in special process rooms where uniform heat maintenance is required.

ONCE a user always a user—speaks for the dependable and economical heating results made possible by the Herman Nelson hiJet Heater.

The hiJet's sales success is the result of RESULTS.

Its heating element is the Herman Nelson Radiator free of all brazed, welded, soldered or expanded joints to fail or leak in service. Operating steam pressures from 1 to 150 lbs.

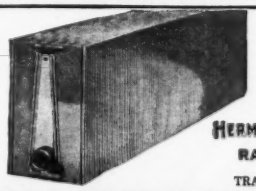
A specially designed motor, the Her-Nel-Co, permits simple speed control with minimum running current.

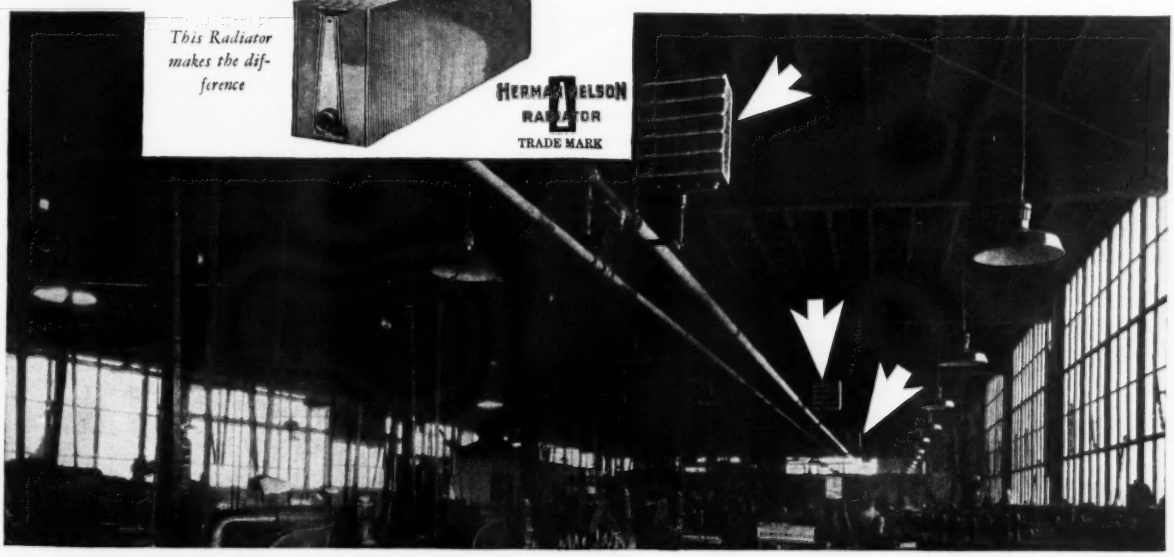
In operation the hiJet directs a high velocity jet of warm air downward, dispelling the cold air strata at the floor line—resulting in an even comfortable temperature.

The hiJet is made in three sizes—all easy to install.

Before selecting heaters for your next heating job, get all the facts about the hiJet. Mail coupon for catalog.

This Radiator makes the difference





Pontiac Pattern and Engineering Company, Pontiac, Michigan

Manufactured only by THE HERMAN NELSON CORPORATION, *Moline, Ill.*
Builders of Successful Heating and Ventilating Equipment Exclusively

Sales and Service

BELFAST, ME.	CHARLOTTE, N. C.	MILWAUKEE	EMPORIA
BOSTON	GRAND RAPIDS	GREEN BAY	KANSAS CITY
SPRINGFIELD	SAGINAW	MINNEAPOLIS	TULSA
PROVIDENCE	FLINT	DULUTH	DENVER
NEW YORK CITY	DETROIT	ST. LOUIS	SALT LAKE CITY
SYRACUSE	CLEVELAND	BIRMINGHAM	SPOKANE
BUFFALO	COLUMBUS	ATLANTA	PORTLAND
PHILADELPHIA	CINCINNATI	NEW ORLEANS	SEATTLE
SCRANTON	TOLEDO	MEMPHIS	SAN FRANCISCO
HARRISBURG	INDIANAPOLIS	LOUISVILLE	VANCOUVER
PITTSBURGH	CHICAGO	DALLAS	TORONTO
JOHNSTOWN, PA.	DES MOINES	OMAHA	WINNIPEG, MAN.
WASHINGTON, D. C.			CALGARY

The HERMAN NELSON
hiJet
TRADE MARK
HEATER

GET FREE BOOK

THE HERMAN NELSON CORPORATION
Moline, Illinois

Gentlemen:
Please send me book No. 11 containing the facts about Herman Nelson hiJet Heater.

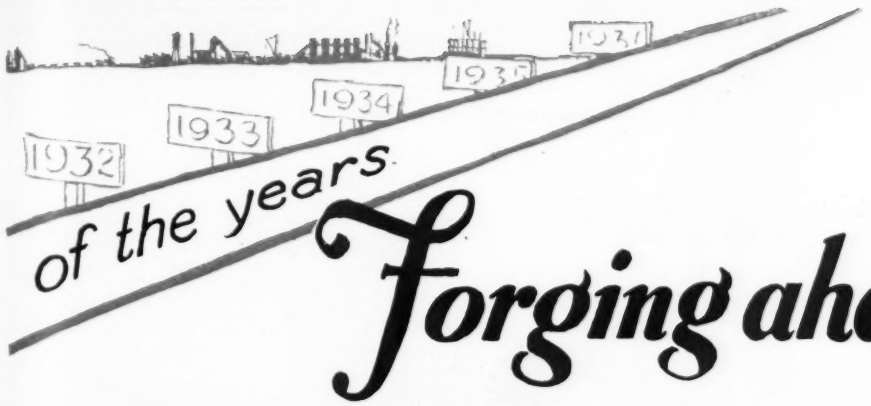
Name..... *Firm Name*.....

Address..... *Type of Building*.....

A heating section that you can stand behind—tested to 400 pounds pressure—immune to corrosion and water hammer. Standard units are sold for pressures up to 250 pounds.

Even the best unit heater is not at its best unless the lay-out of the system is properly developed.

We therefore consider engineering service a vital factor in the success of every installation. Our engineers will be glad to co-operate with you in solving specific problems.



Forging ahead—

Five years ago the unit heater was a novelty. Then it became a sensation. There was a rush for unit heaters—a rush into the field on the part of manufacturers who were equipped to build equipment of this kind. Today the unit heater is beginning to settle down on even keel. The buyer is becoming more sane. The standards are becoming more exacting. That is why the Thermal Unit now stands out clearly in a crowded field. It has gained this position through sheer force of merit. Its quality and its stamina are now recognized.

Here at last is a unit heater that is built, without consideration of cost, to overcome the weaknesses that are found in "just a unit heater." The heating section of the Thermal Unit is an object-lesson in combining ideal efficiency with abundant strength. It is cast in one-piece of silicon-aluminum. There is not a joint or weld in the entire heating section. From the steam passages to the uttermost tip of the extended heating surfaces there is not a single break in the solid metal to interfere with the free and unimpeded travel of heat. So the integral construction not only means strength but also exceptional efficiency!

Throughout—from the liberally rated motor to the airplane-wing design of the louvers and fins—Thermal Units possess that ideal combination of rugged construction and refinement of design that has made them first choice of foremost engineers and contractors.

These men who know unit heaters have found the Thermal Unit best in the "test run" of the years. That is why it is forging ahead at an unprecedented rate.

Only Thermal Units have *all* of these advantages

1. A one-piece silicon-aluminum heating section tested to 400 pounds hydrostatic pressure and regularly listed for steam pressures up to 250 pounds.
2. A heating section that is totally free from joints or connections — leakage or losses in heat transmission is *impossible.*
3. Airplane design in air passages, fins, and louvers means minimum resistance to air delivery and greater projection of heat.
4. Heating section is so ductile that it cannot even be damaged by freezing while in service.
5. Liberally rated motor is suspended so that vibration is minimized. As a result, Thermal Units are noiseless.
6. Thermal Units are backed by an engineering service that invariably "makes the layout justify the outlay." They are specifically guaranteed by a highly responsible manufacturer.

THERMAL UNITS CO.

A Subsidiary of the Mechanical Mfg. Co.

Pershing Road and Loomis Street, Chicago, Ill.

Eastern Office: 30 Church Street, New York, N. Y.

THERMAL UNIT
INTEGRAL SECTION
HEATERS
PATENT PENDING

Approved by Investigating Committees of Architects and Engineers

"See how that back sheet extends into the firebox—

"That's one of the main reasons why this boiler generates steam so much faster than the ordinary steel boiler.

"That rear deflecting arch makes the gases sweep from rear to front, giving them a longer travel before entering the tubes and creating a turbulence that makes thorough mixing with the air a certainty. You'd be astonished at the difference that feature makes in the combustion.

"Notice also that the tubes are small in diameter and there are correspondingly more of them. That's another big reason why heat transfer in this boiler is so much more efficient,—for small tubes have a higher proportion of surface to volume of gases passing through. The heating surface in this boiler is concentrated where the gases are hottest.

"But you want to witness the exceptional speed with which this boiler picks up the heating load. Then you will readily understand what the better combustion and the more efficient heat transfer mean. Naturally, its quick pick-up makes the boiler particularly valuable for oil burner service.

"And, of course, with the better operation you get substantial savings in fuel."

Every heating contractor should look into the Fitzgibbons Boiler. It is a sure good will builder because it always satisfies the owner from every point of view. All of the many features and advantages are clearly illustrated and explained in the Fitzgibbons Steel Heating Boiler catalog.

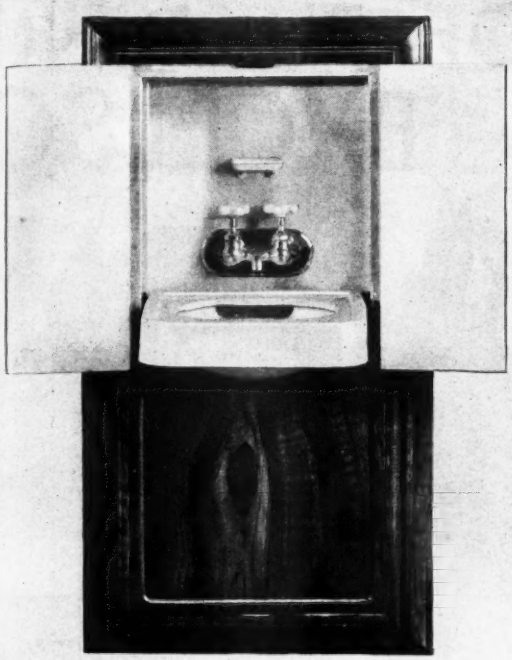
Write for a copy today.

FITZGIBBONS BOILER CO., *Inc.*
570 SEVENTH AVENUE NEW YORK, N. Y.
Works: Oswego, N. Y.

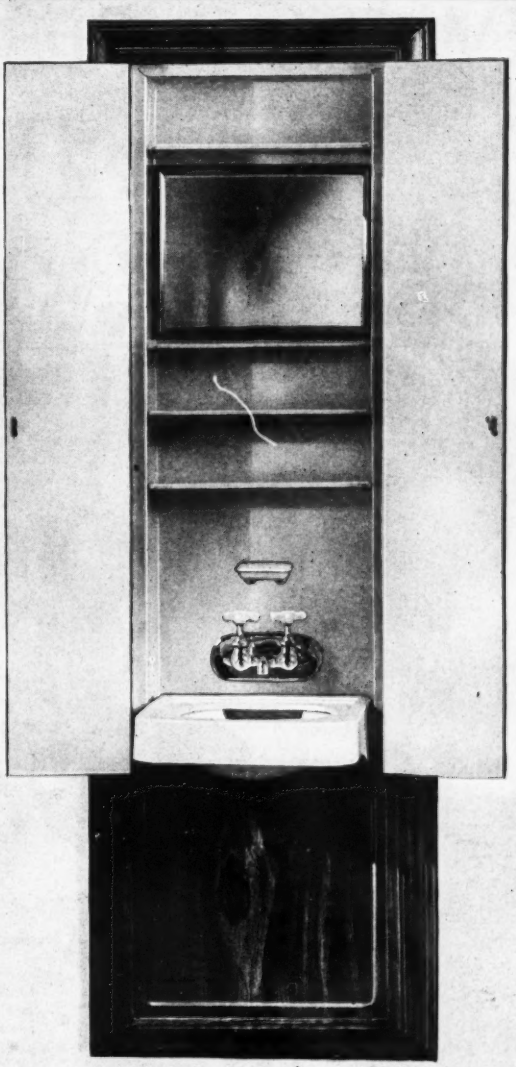
the sign of the best in steel boiler heat

BRANCHES AND REPRESENTATIVES

Baltimore	Pittsburgh	Grand Rapids	Richmond	Rochester
Bridgeport	Boston	Pittsfield	San Antonio	Syracuse
Detroit	Buffalo	Philadelphia	Reading	Winston-Salem



MURPHY CONCEALED LAVATORY
MODEL "A" WITH DOORS OPEN



MURPHY CONCEALED LAVATORY
MODEL "B" WITH DOORS OPEN

The MURPHY *Concealed Lavatory*

is sold only through the

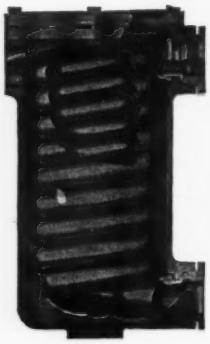
Plumbing Supply Trade

The Murphy Concealed Lavatory brings washroom conveniences to every home, apartment, hotel and office building at very low cost and without the need for floor space. It fastens to the wall studs and extends only 3½ inches from the wall. Installation is very simple and inexpensive. Standard pipes and fittings are used. The bowl tilts up. This action also empties the water without splashing . . . The standard exterior finish of the steel cabinet is grained mahogany enamel. Also furnished in baked priming coat so that any color finish can be used to harmonize with room decorations. Interior is porcelain enamel. The Murphy Concealed Lavatory is practical, sanitary and foolproof. Nothing to get out of order . . . Be sure to have a sample Murphy Concealed Lavatory in your store. You will get volume sales on it with a good, clean profit on each unit. It is sold only through established plumbing supply dealers. Write now for complete information. Murphy Door Bed Company, Plumbing Fixture Division, 923 S. Keeler Ave., Chicago, Ill.

M U R P H Y
Concealed Lavatories

EVERY TYPE OF BUILDING EXCELSO

The Excelso Fire Pot Generator (also Phaeton and Fin Pin types of direct heaters) for use with warm air furnaces and hot water boilers.



Double and triple coil Excelso Indirect Heaters showing *removable* copper coil and patented ground joint Brass Connections. Single or in battery, for moderate sized apartments, hotels, etc.

Excelso INDIRECT Water Heater Capacities

		Single Coil						Double Coil				Triple Coil		
	Nos.	Jr.	11	12	13	14	15	25	26	27	28	35	36	37
Heating water below water line	Gals.	30	30	45	60	90	120	160	200	300	400	600	800	1000
Heating water with live steam	Gals.	45	50	75	100	150	200	250	300	450	600	900	1200	1500

Excelso Dual Coil INDIRECT Heater Capacities

	Nos.	42	44	46
Heating water below water line	Gals.	1200	1600	2000
Heating water with live steam	Gals.	1800	2400	3000

Excelso DIRECT Water Heater Capacities

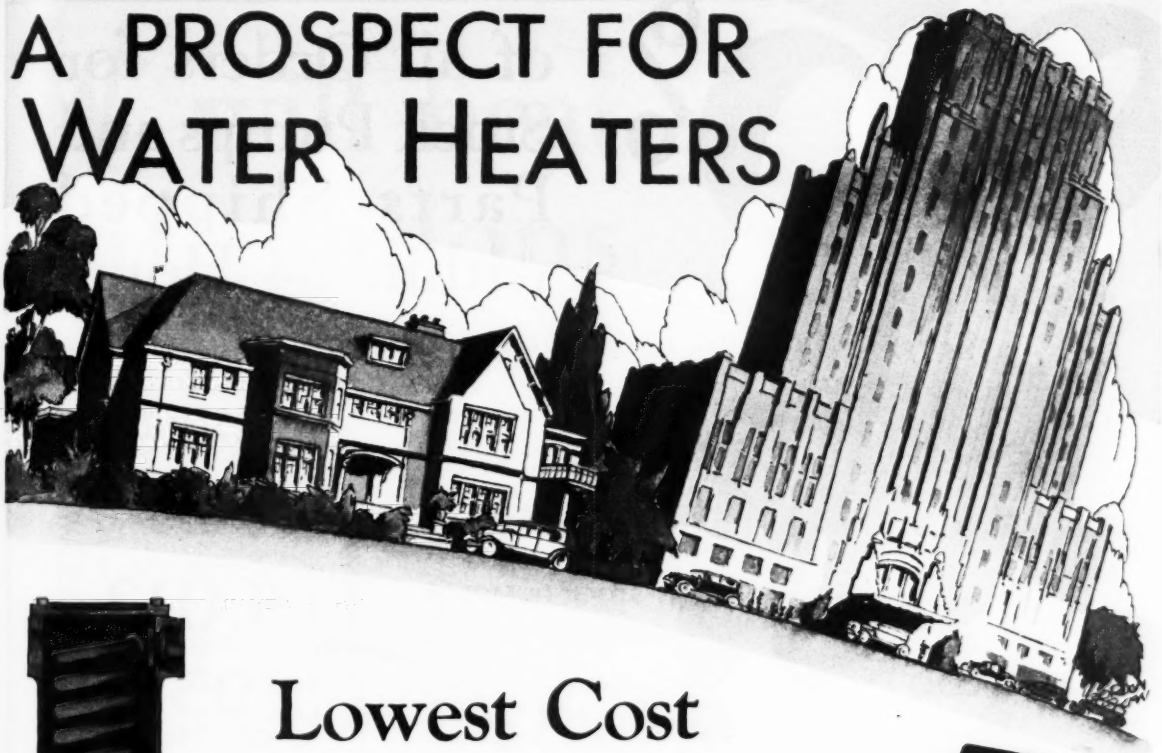
Phaeton

Size	6 in.	8 in.	10 in.	12 in.	15 in.	18 in.
Cap. Gals.	30	45	80	100	150	250

Generator			Fin Pin		
Size	No. 1	No. 2	Size	No. 30	No. 40
Cap. Gals.	40	60	Cap. Gals.	30	40

NATIONALLY DISTRIBUTED BY LEADING WHOLESALERS AND BOILER AND RADIATOR MANUFACTURERS

A PROSPECT FOR WATER HEATERS



Excelso Single Copper Coil Indirect Water Heater with *removable* copper coils and patented ground joint brass connections, for use with steam or vapor heating plant.

Lowest Cost Hot Water

ALL of the care and most of the cost of heating water saved; no separate fire; no troublesome firepot coils; connects with regular piping system; quality construction to last a lifetime.

Write for catalog picturing the complete line of Excelso Indirect and Direct Water Heaters, 14 typical tested installations with valuable information on hot water fixture and tank capacities.

Excelso Dual Coil Indirect Water Heater with *removable* copper coils and patented ground joint brass connections, for large hotels, office and mercantile buildings, for use with steam heat or power plants.

Excelso Products Corporation

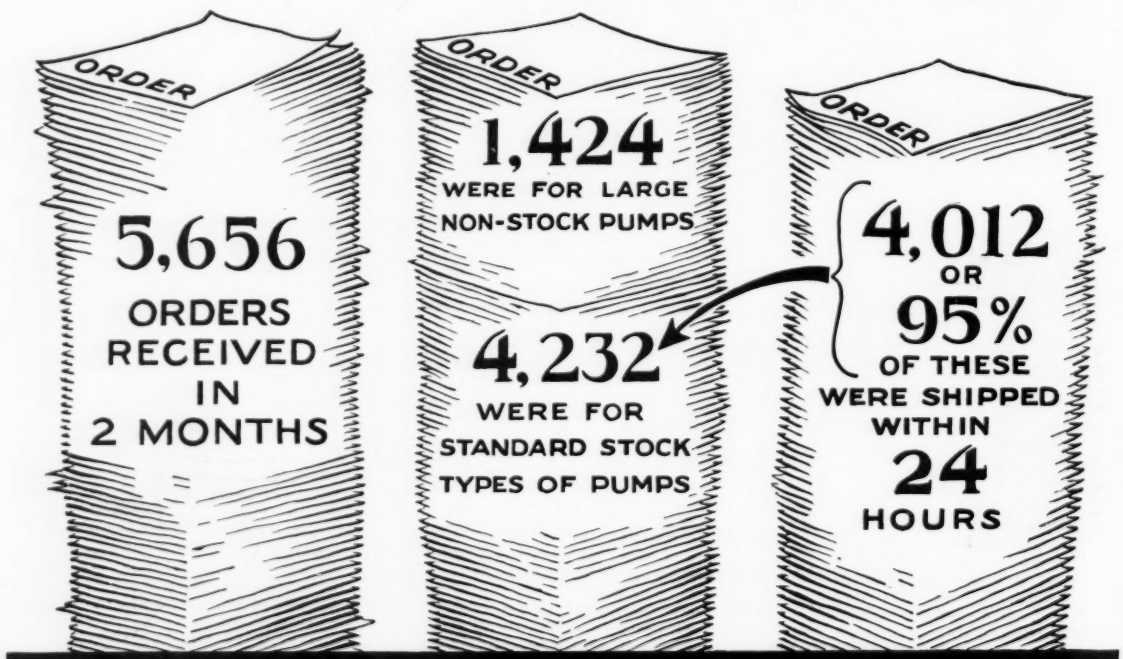
57 Clyde Ave. Buffalo, N. Y.

EXCELSO INDIRECT WATER HEATERS

Sizes to Supply Hot Water for One Family or One Hundred Families

95% of all Orders for Stock Pumps and Parts Shipped within 24 Hours

Quick Service is Another Goulds Feature



SERVICE and quick shipments—within 24 hours—on all standard pumps and parts! That is Goulds service—to-day.

Study the above charts. They illustrate Goulds service—show that 95 per cent. of the orders for "stock" pumps received during two months were filled within one day after receipt of the order at the factory.

This speedy delivery, in addition to a complete line of pumps that includes one for every purpose, offers a service that is hard to surpass. Send us your pump orders and let us demonstrate our quick delivery facilities. We carry large warehouse stocks at Boston, New York, Philadelphia, Chicago and Seneca Falls so that your needs can be met speedily.

GOULDS PUMPS INC.

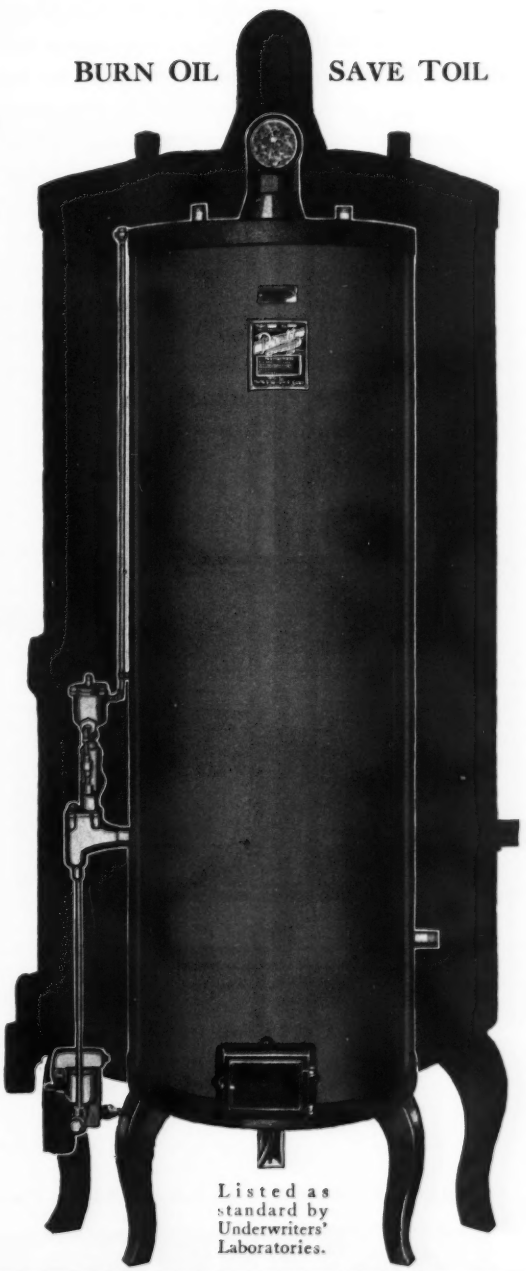
Seneca Falls, N.Y.

Branch Offices:

Citizens & Southern Bank Bldg., Atlanta, Ga.
194 Congress St., Boston, Mass.
12-14 South Clinton St., Chicago, Ill.
1902 Second National Bank Bldg., Houston, Tex.
16 Murray St., New York, N. Y.
111 North Third St., Philadelphia, Penn.
636 Henry W. Oliver St., Pittsburgh, Penn.
705 Kennedy Bldg., Tulsa, Okla.
Union Trust Bldg., Cleveland, Ohio

1¢ will heat 10 gallons of water

BURN OIL SAVE TOIL



Listed as standard by Underwriters' Laboratories.

Distinctive features which mean 25% to 75% less operating expense, sell the Piatt Oil-burning Water Heater against all other water heaters. It possesses Simplicity, Safety, Reliability and Cleanliness not even approached by any other heater.

Now dealers can solve the problem for a year around seller with low installation cost and practically no service.

Piatt Oil-burning Water Heaters require no gas or electrical connections; have no springs, weights or wicks, make no noise or odor. Positively the sweetest profit builder on the market.

Write for copy of liberal franchise. See why this strongly financed, improved and well patented heater fits perfectly with your needs.

MOTOR WHEEL CORPORATION
Heater Division
LANSING MICHIGAN

PIATT OIL BURNING APPLIANCES
HEATER DIVISION • • MOTOR WHEEL CORPORATION

Motor Wheel Corporation, Heater Division, LANSING, MICHIGAN
Send me at once, full information and profit-building plan on the Piatt Heater. I am not obligating myself but will study the details carefully.

Name .....
(Please print or typewrite)
Street .....
City ..... *State* .....
My Business .....

"Any Slab will fit. This is Kohler Ware"

WHEN you handle Kohler Vitreous China, you can pick any lavatory slab and know that it will fit any leg or pedestal.

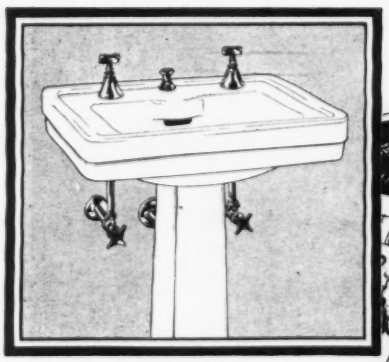
A Kohler slab and its leg or pedestal never have to be kept together in pairs. No time wasted hunting up the missing partner. *Every* leg or pedestal is interchangeable with any slab.

In the Kohler Pottery, one of the largest and most modern in the world, many such improvements have been introduced. For instance, every lavatory slab is prepared at the factory so that it can be leveled up without using plaster of paris.

You save money, Mr. Plumber, because of these Kohler improvements. You finish the job more speedily and with greater satisfaction to all concerned. You are ready for the *next* job sooner.

The whole Kohler line—vitreous china, enameled ware, and brass—is *engineered* to help plumbers make more money. Specialize on *all-Kohler* installations and get the benefit of all these betterments. Ask your jobber about the Kohler proposition.

Another Way Kohler Helps Plumbers Make More Money



A Perfect Union

In addition to being interchangeable and easily leveled, Kohler lavatory slabs are designed to blend with the leg or pedestal, making an inconspicuous joint — a perfect union

New 72-Page Book in Color to give to your best prospects

Shows bathrooms, kitchens, laundries, color schemes, suggested retail prices. Send for a supply.

KOHLER CO., *Founded 1873,* Kohler, Wis. · *Shipping Point,* Sheboygan, Wis. · *Branches in Principal Cities*

KOHLER OF KOHLER

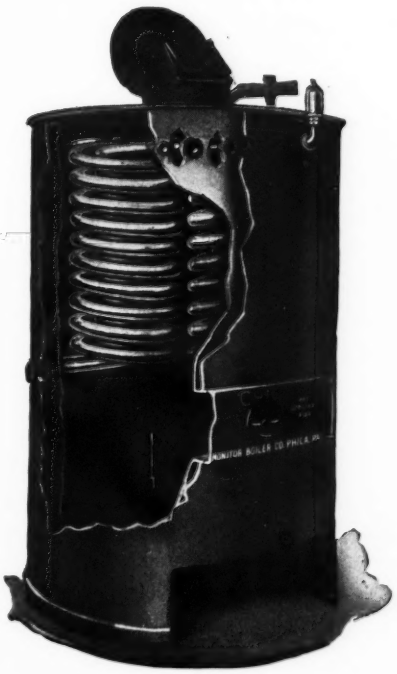
MEMBER PLUMBING & HEATING INDUSTRIES BUREAU T. E. B.

PLUMBING FIXTURES

LOOK FOR THE KOHLER TRADE MARK ON EACH FIXTURE

COIL

STEEL HEATING BOILERS AND WATER HEATERS



We will be glad to send you complete detailed information about Coil Boilers. Merely send us your letterhead or business card.

Hundreds of letters from Heating Contractors the country over attest Coil Boiler superiority.

FOR OIL BURNING

Coil Boilers have been developed up to their present high standard of efficiency only after years of constant effort. With the advent of oil as a heating fuel medium, the Coil Boiler, because of its advanced design, was found ideal for this type of work.

It affords a much greater area of heat absorbing surface to the living flame and because of this, not only does a better job of heating but effects savings in fuel hardly thought possible.

MONITOR BOILER COMPANY

1505 Race Street :: :: Philadelphia, Pa.

MIXING · VALVES

THE MEDINAH ATHLETIC CLUB,
CHICAGO

Architect and Consulting Engineer:
W. W. AHLSCHLAGER

Plumbing Contractor:
CARL J. STEIN CO.

More than 25 Powers Shower Mixers are installed in the above building. The temperature of the service hot water heaters and two swimming pools are accurately controlled with Powers apparatus.

Playing with Water is "Playing with Fire"

We quote from a recent item appearing in the Chicago Daily Tribune: *"Oscar Nelson, 39 years old, 1024 Dempster St., Evanston, was treated at St. Francis' Hospital early yesterday for burns received when he accidently turned on a stream of scalding water while taking a shower bath."*

Playing with water is "playing with fire."

A sudden "shot" of hot or icy water might result in heart failure. Unguarded showers are dangerous.

Ordinary shower mixers merely mix hot and cold water. They do not control changing water pressures—the chief cause of sudden and unexpected changes in the temperature of a shower.

The Powers Shower Mixer is entirely different from other mixers. It has a Pressure Equalizing Valve that automatically *controls* fluctuating water pressure caused by use of nearby showers, flush valves, faucets, etc.

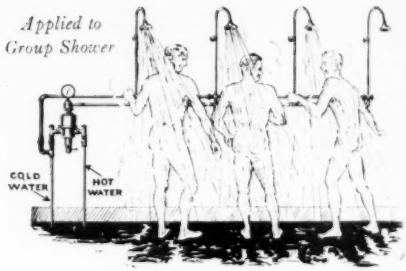
This is only one of the remarkable features of the Powers *SAFETY* Shower Mixer. Write for 22 page book showing results of tests and complete information.

Play Safe! Install Powers Shower Mixers!

The Powers Thermostatic Water Controller

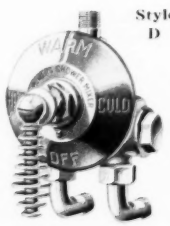
For group showers, baby baths, continuous flowing baths, car washing, etc. Scalding water cannot pass through this controller. Failure of cold water supply instantly shuts off the delivery. Simple in design. Rugged Construction. *Write for 12-page folder*

Applied to Group Shower



The Powers Steam and Water Mixer

Style D



For shower baths, wash sinks, car washing, etc. Steam at 10 to 100 lbs. pressure and cold water at any pressure, piped to this mixer will give you COLD—WARM—or HOT water instantly. Positively Safe! No "shots" of hot or cold water—No noise or water hammer. *Write for Bulletin No. 2035*

THE POWERS REGULATOR COMPANY

35 years of specialization in temperature control

General Eastern Office
137 East 46th St., New York City

General Offices and Factory
2716 Greenview Ave., Chicago, Ill.

Canadian Powers Regulator Co., Ltd.
106 Lombard St., Toronto, Ont.

Offices in 35 other cities — See your telephone directory

POWERS

Webster Type "R" Systems for "TAXPAYERS"

"TAXPAYERS" are erected as insurance on investment—often against the time when a neighborhood shall "grow up" to improvement by a permanent, profit-paying structure. The aim is to not only keep down building expense, but to maintain service to tenants at minimum cost.

Here is an example of efficient and economical heating service by the Webster Type "R" System of Steam Heating—highly engineered but easy and simple of installation. Its operation is trouble-free, because the services of a skilled operating engineer are not required. In this Washington "taxpayer," the Type "R" System is giving unusually satisfactory results as it is doing consistently in many other types of business buildings and residences.

Because their installations of Type "R" Systems are delivering heating satisfaction, heating contractors hold them in high favor in bidding for *preferred business* in their neighborhoods. The Webster Steam Heating Specialist in your vicinity can probably help you in developing this kind of business—based not on price but on performance.

-since 1888 Webster Systems of Steam Heating

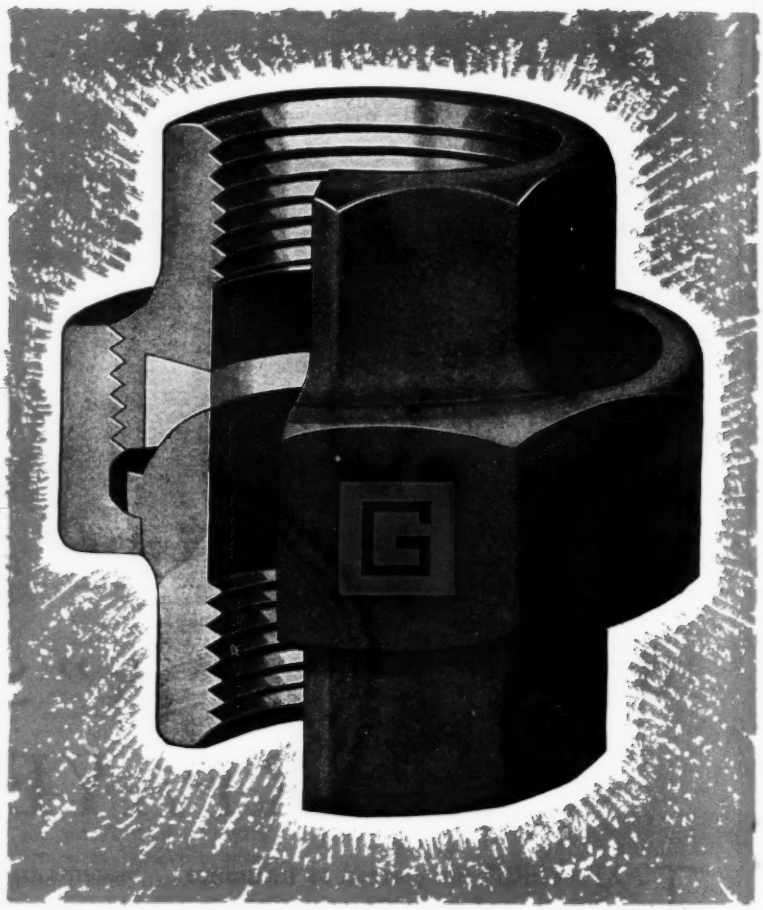
The Webster Steam Heating Specialist in your vicinity can probably help you in developing PREFERRED *business with Webster Type "R" Systems. Get in touch with him.*

WARREN WEBSTER & COMPANY
CAMDEN, NEW JERSEY
Pioneers of the Vacuum System of Steam Heating
Branches in 52 principal U. S. Cities
In Canada—Darling Bros., Ltd., Montreal

WARREN WEBSTER & COMPANY, Camden, New Jersey DE-9-29

Please mail Bulletin B-600, describing the Webster Type "R" System of Steam Heating to

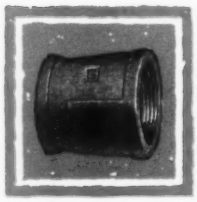
Name..... Street..... City.....

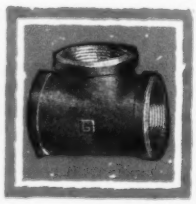


Sure, they'll *look* like SQUARE "GEES"

ALL fittings look alike. Side by side it is difficult to pick out a ham-and-egger from a Square "Gee". But once on the job the distinction is so great as often to spell the difference between profit and loss.

Square "Gees" cost no more than ordinary fittings—yet they are made from the cream of raw materials. They are made by a method that puts to shame ordinary foundry practice by bringing the *molds to the metal* instead of carrying the metal to the molds thus making continuous pouring possible and checking out all chance of brittle and ordinary fittings. They have a beading burly enough to stand up under the toughest kind of wrench-scuffling. They are threaded on special tapping machines to insure a deep giant-like grip, a come-easy-and-fit-tight-job.





Cutting time—saving labor, Square "Gees" can never be accused of trying to nibble away your profits.

In short, a judge hearing our story would sum it up by saying: Gentlemen, the verdict is: Your fitting problem is solved when you say Square "Gees".

The GRABLER MANUFACTURING *Co.*
and its subsidiary GRABLER-REPUBLIC, *Inc.*
4900 Euclid Building · · · Cleveland, Ohio

YOUR FITTING PROBLEM IS SOLVED WHEN YOU SAY SQUARE "GEES"

SQUARE Pipe

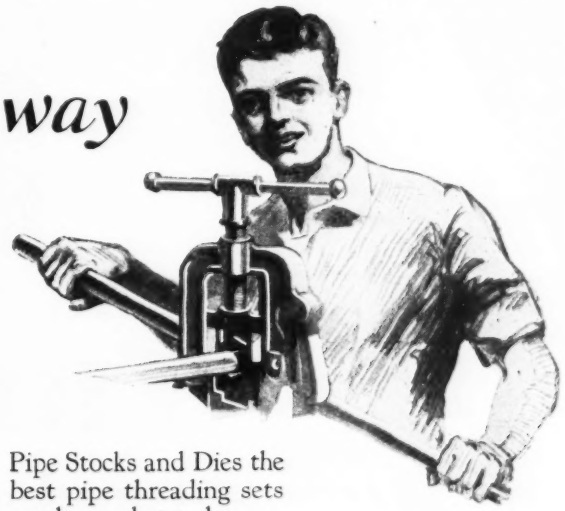
"GEE" Fittings

MALLEABLE, CAST IRON DRAINAGE, BRASS

NOW 1/3 the effort

cuts perfect threads the new

GREENFIELD *way*

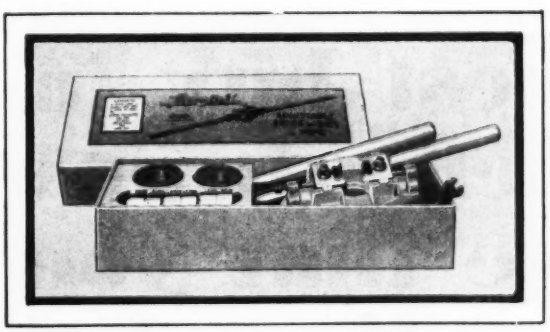


Pipe Stocks and Dies the best pipe threading sets on the market today.

And it's no pipe dream either. Actual laboratory tests prove that the new *Greenfield* Adjustable Pipe Stocks and Dies reduce thread cutting labor 33⅓%. Think of it! The energy you would normally use in six hours does eight hours' work. What a whale of a difference that one-third makes.

Start the die—be sure it's straight—squirt on a little cutting oil, and spin the stock down. Watch the chips fall free—no jamming, no clogging, no burring . . . Now back the die off and look at the result. Perfect threads as sharp and accurate as though they had been turned on a lathe. Man, what a tool!

Of course, there are reasons for this improvement in thread cutting. On *Greenfield* Adjustables, the cutting edges of the dies are accurately spaced so that each tooth cuts uniformly. Then, too, the cutting rake is positively established on each land. These two qualities, plus perfectly relieved threads, make the new *Greenfield* Adjustable

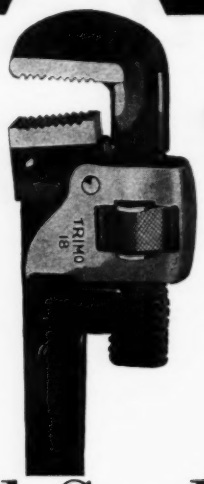


But, of course, there is only one way to be convinced and that is to get a set from your dealer and use it. Make it work on your next job. Test it for accuracy. Test it for ease of turning. Test it for results. Then you will know that *Greenfield* Adjustable Pipe Stock and Die sets actually reduce thread cutting labor and do a better job.

For the man who prefers a more inexpensive set, *Greenfield* markets another brand—the "*OK*" Stock and Die set. This set, too, has the mastery of design and cutting ease that characterizes *Greenfield* Adjustable Pipe Stock and Die sets. Write today for complete new Pipe Tool Catalog.

GREENFIELD TAP AND DIE CORPORATION
GREENFIELD, MASS., U.S.A.

New York: 15 Warren St., Chicago: 611 W. Washington Blvd., Detroit: 228 Congress St., W.
Canadian Plant: Greenfield Tap & Die Corp. of Canada, Ltd., Galt, Ontario

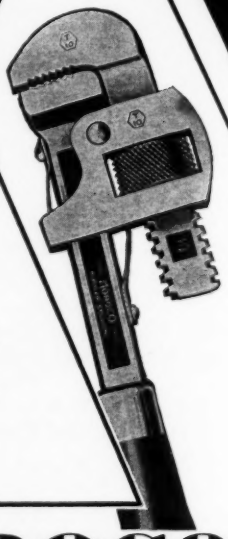


All Steel

TRIMO

Improved and Mightier

Pipe Wrench



SANDO

Original Stillson

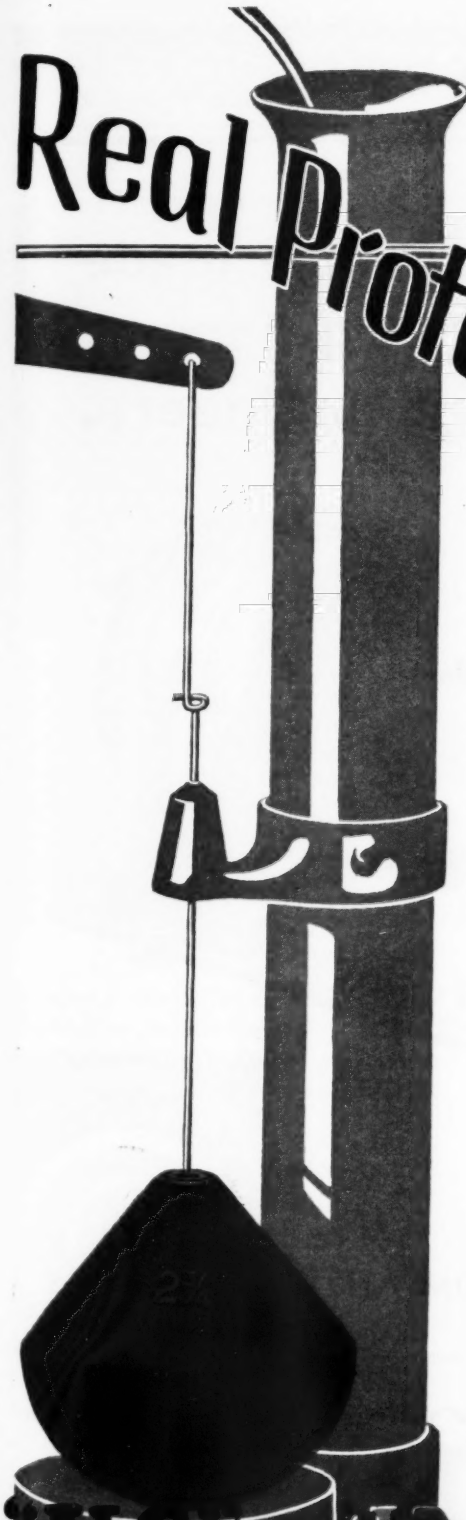
MOROCO

Popular Stillson

The best buy in Pipe Wrenches in any style or size that you may need .. *all made by the*

TRIMONT MFG. CO., Roxbury (Boston), Mass.

Real Protection ALWAYS



Not only "U. S." Tank Balls and Floats, but all "U. S." Royal Maroon Line products will give both you and your customer real protection always.

For you it means an exclusive product. You are the only one who can give the high "U. S." quality to your customer. The "U. S." Plumbers' Specialties are distributed ONLY through selected supply houses.

Also it means the elimination of free service calls, bill adjustments and kicks. Your customer will be satisfied by the "U. S." quality and performance.

Investigate the "U. S." Royal Maroon Line of Plumbers' Specialties. See your jobber today and ask for the "U. S." Plumbers' Catalog, or write us direct.

United States Rubber Company

TRADE MARK

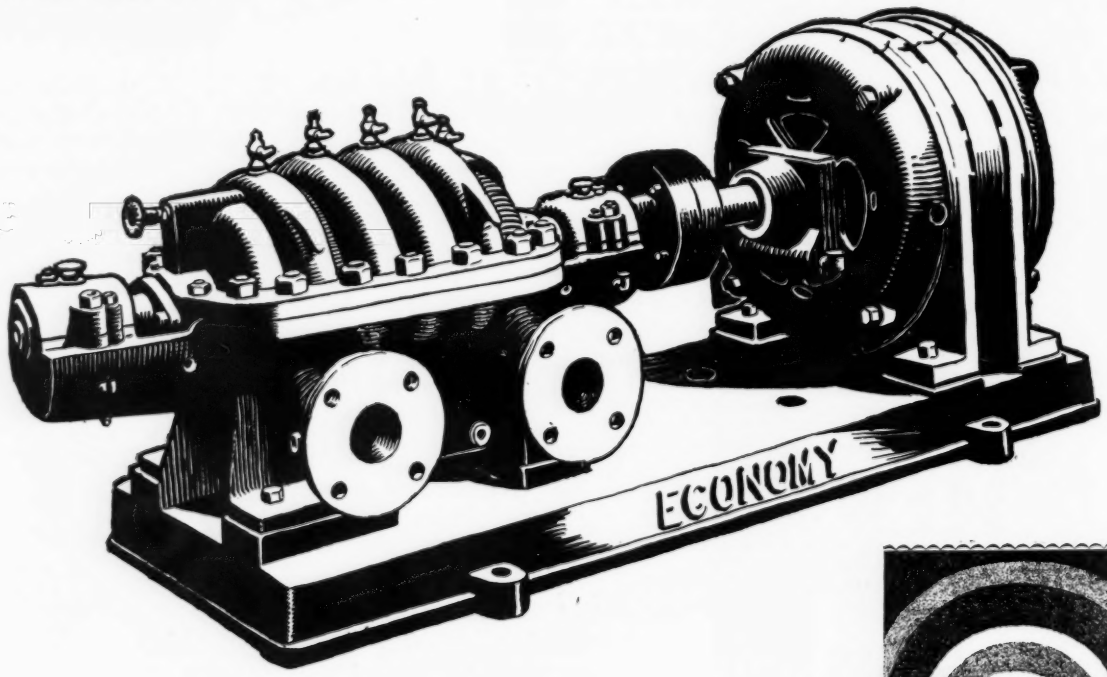
Executive Offices:
1790 Broadway, New York City

"U.S." ROYAL MAROON LINE
of Plumbers' Rubber Specialties

21 YEARS OF SUCCESS AS SPECIALISTS IN

CENTRIFUGAL PUMPS

Unusual performance made them standard equipment with prominent engineers.



For details on standard models, send for bulletins

ECONOMY PUMPING MACHINERY COMPANY

3431 West 48th Place :: Chicago

Representatives in principal cities—telephone and address under company name

Economy Pumps

All standard types—also specially designed pumps to meet any condition

Quicker, CLEANER HEATING

—and at less cost with this Modern Radiator

The modern McQuay is *more* than an attractive radiator. It dispenses healthier, moistened heat quicker, with a decided fuel saving.

The tube and copper fin heating unit is the most efficient medium known for transferring heat. And the heated air is sent out **in a horizontal direction** with sufficient initial velocity to circulate it completely—heating rooms far more quickly and preventing soiling of walls and drapes.

Due to this complete circulation, and the greater heating effectiveness of moist air, rooms are kept comfortably warm with lower radiator temperatures—**materially reducing heating costs.**

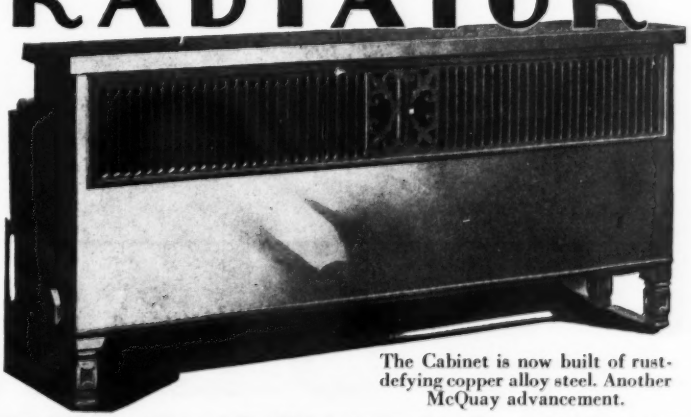
Honestly Rated

McQuay radiators are accurately rated. They will heat every bit of the capacity guaranteed by their catalog ratings.

Weigh Less—Occupy Less Space

A 50 square foot McQuay weighs about 75 pounds. You can tuck it under your arm. That cuts freight, handling and installation costs.

McQUAY Cabinet RADIATOR

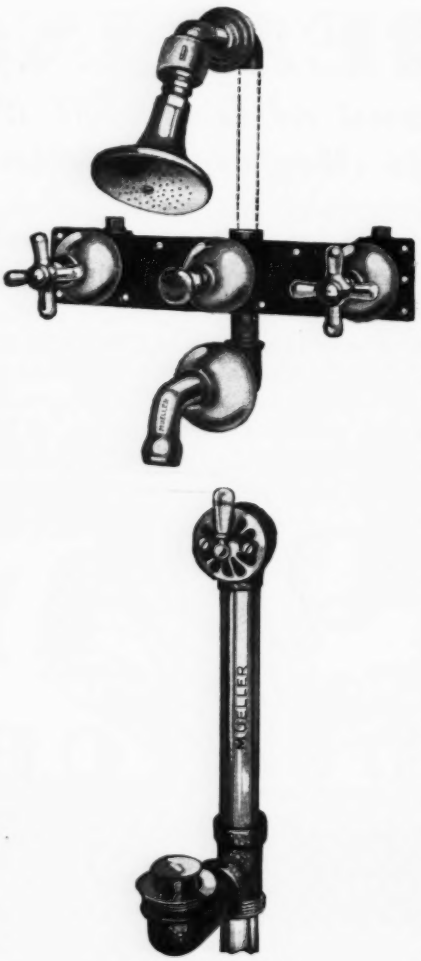


The Cabinet is now built of rust-defying copper alloy steel. Another McQuay advancement.

McQUAY RADIATOR CORPORATION

General Offices, 35 East Wacker Drive, Chicago ***Branches in most principal cities***

"Vital Spots" —*are profit spots*



Faucets, fixtures, fittings—are the vital spots of a plumbing system. Make these vital spots "profit spots" *for you* by selling and installing Mueller equipment.

Mueller products sell readily because they are designed in the modern mode, finished beautifully and offer a wealth of convincing "talking points." Mueller quality backed by 72 years of successful manufacture is your insurance of lasting good will on every Mueller installation.

Your request will bring Mueller catalog and prices by return mail.

MUELLER CO. [Est. 1857] Decatur, Illinois
Branches: New York, Dallas, San Francisco, Los Angeles
Canadian Factory: MUELLER, Limited, Sarnia

MUELLER G-4765 (illustrated)

The Mueller Automatic Diverter for Tub and Shower meets the popular demand for bathroom luxury. It is impossible to get an unexpected shower from this fitting because, after side or control valves have been shut off, the Automatic Diverter Valve directs the flow to the tub when the water is again turned on. Desirable for hotel and apartment installations. Finished in non-tarnishing chromium plate. Complete with pop-up drain for bath.

MUELLER

PLUMBING BRONZE AND VITREOUS WARE

As substantial as it looks!

HOTEL GOVERNOR CLINTON
New York City

Architect, Murgatroyd & Ogden, New York City
General Contractor, Thompson-Starrett Co., New York City
Heating and Ventilating Engineers, Jaros & Baum, New York City
Plumbing Contractor, Frank B. Lasette, Inc., Long Island City, N. Y
Heating Contractor, Thompson-Starrett Co., New York City

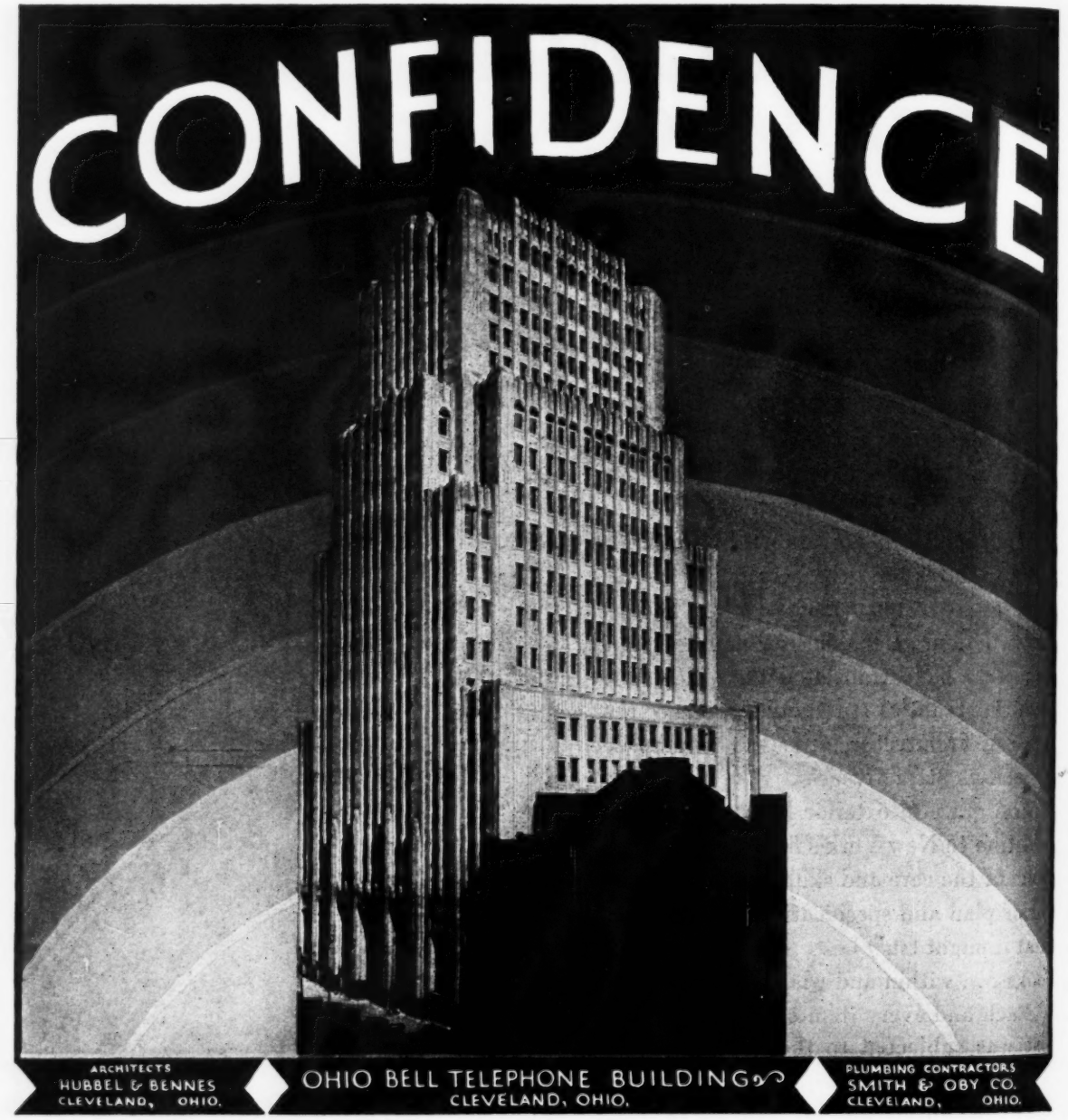
AT Seventh Avenue and Thirty-First Street, New York, another triumph in hotel construction has recently been completed. Rising thirty-one stories above the ground, the Hotel Governor Clinton majestically salutes the sky—a magnificent combination of beauty and stability in hotel construction. Here, master architects and engineers have translated their ideals into enduring realities . . . another evidence that modern architecture aims at permanence as well as attractiveness.

The graceful exterior lines of this latest addition to New York's fine hotels are symbolic of the care and skill applied to the interior plan and specification of materials—that it might truly be . . . as substantial as it looks . . . within and without.

Each and every item on the specification list was subjected to the closest scrutiny. There could be no compromise with quality here—no substitute for proved dependability—endurance was foremost in consideration. And when it came to the piping—one of the most important items in a building of this type—NATIONAL was specified for the major pipe tonnage.

NATIONAL TUBE COMPANY · Pittsburgh, Pa.
Subsidiary of United States Steel Corporation

NATIONAL PIPE



THE BELL TELEPHONE COMPANY, with its world-wide experience in real estate matters, put "Bridgeport" pipe in its magnificent new Cleveland headquarters building. In meeting the exact requirements for this multi-million dollar structure, the Bridgeport Brass Company uncovered added evidence that "big business" has Confidence in its products and service.

PLUMRITE BRASS PIPE

BRIDGEPORT BRASS COMPANY *Manufacturers* - General Offices, BRIDGEPORT, CONN.

Urge This Heat Saver for Every Job You Get

IF *your* heating plant does the job well, your customer is satisfied. And whatever helps to make your customers boosters, helps your success.

Heating engineers know that a great amount of heat generated by their plants is lost through the walls and roof of the building. And that's a part of the building they don't have anything to do with. The walls and roof are like a sieve. Heat leaks out at an amazing rate — right through ordinary construction materials.

But a blanket of soft, fleecy Balsam-Wool tucked between studding, joists and rafters can save as much as 25 to 40 percent of the lost heat—a fourth or more of the entire fuel bill.

It gives greater comfort all year round, it helps to prevent drafts and damp walls. It gives you an opportunity to quote lower in competitive bidding. For a smaller boiler and less radiation can be used when Balsam-Wool has been tucked into every crack and crevice.

Balsam-Wool is *true* insulation. Recommend its use. *Your* heating plant will work better, easier, cheaper. That helps *your* business.

Balsam-Wool
Blanket
it tucks in!
Balsam-Wool is a guaranteed Weyerhaeuser product —a blanket of fluffy wood fibre that looks and acts like sheep's wool. It is TRUE Insulation—keeping the house warm in winter and cool in summer—because it is—
FLEXIBLE-THICK
EFFICIENT
WINDPROOF
WATERPROOF
FIRE RESISTANT
VERMIN PROOF
LIGHT WEIGHT
PERMA-NENT

WOOD CONVERSION COMPANY
CLOQUET, MINNESOTA

Makers of Balsam-Wool, the Flexible Insulating Blanket. Also Makers of Nu-Wood—the ALL WOOD *Insulating Wall Board and Lath*

Sales Offices: New York, 3107 Chanin Bldg.—Detroit, 515 Stephenson Bldg. Chicago, 360 N. Michigan Ave.—Minneapolis, Baker Bldg.—Kansas City, 231 W. 47th St.—Seattle, 621 Liggett Bldg.

SOLD THROUGH RETAIL LUMBER DEALERS

THE HANDY SPEEDLOK

Domestic Engineering Catalog Binder

Especially designed for the standardized catalog page adopted by the plumbing and heating industries

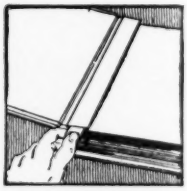
The SPEEDLOK is a quick operating catalog binder designed to fit reprints of catalog pages in "Domestic Engineering Catalog" as well as all other catalog pages that conform to the standards adopted by the plumbing and heating industries.

Easy and speedy operation are special features of this binder. A slight pull on the concealed bar under the top cover unlocks mechanism when sheets are inserted. Equipped with bar for removing sheets when changes are made.

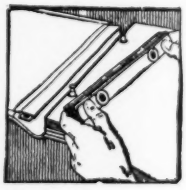
Minimum capacity 1¼ inches. By simply unscrewing extension posts capacity can be extended to 2¼ inches. Works perfectly for all requirements—either a few sheets or filled to capacity.

Covers are bound in heavy black Levant Grained Fabricoid, semi-flexible, very durable and attractive looking.

Price of binder—$3.00 each. ***Prices on quantities on application.***

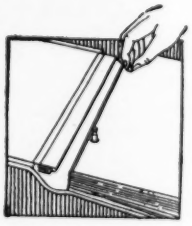


To unlock Binder—Pull out slide bar in top wing. Top cover will immediately fall back.



To lock Binder—bring top wing back over the posts—be sure posts fit in the holes in the top wing—then push in slide bar.

Separate the sheets where desired and slip sheets off the posts. Take out sheets or put in new ones as desired. These three moves take but a few seconds. Each operation is a natural one.



To increase or to decrease the capacity of the binder is a simple operation. The two posts are so constructed that they can be easily raised or lowered to meet the height requirements. Binder posts can be extended from 1¼ inches to 2¼ inches.

For Jobbers' Salesmen—

The loose-leaf system reduces to the minimum the bulk and weight of catalog material required by the salesman. Only matter actually required for selling purposes need be carried in the binder. It does away with the necessity of carrying entire catalogs, booklets and circulars of various sizes and shapes.

Salesmen using the loose-leaf system have a great advantage over men not using this equipment—to say nothing of the added convenience, time and labor-saving features.

With a modernly equipped loose-leaf binder, the salesman can present his products in a more comprehensive manner than it is possible to accomplish by the old methods. Having all his material up to date in compact form and easily available, he can show latest specifications, answer questions or quote prices more readily.

For Plumbing and Heating Contractors—

Many master plumbers and steamfitters assemble working catalogs from standardized catalog sheets filed in binders.

Domestic Engineering is in position to furnish without charge, upon request, loose sheets—which are reprints from catalog pages appearing in "Domestic Engineering Catalog"—of several hundred manufacturers. They are standard catalog page size—10⅝x8½ inches—are printed on a good grade of light paper and punched according to the standard adopted by the plumbing and heating industries. These sheets fit the SPEEDLOK binder.

When orders for binders are accompanied by requests for catalog reprints the binders will be equipped with the sheets desired and shipped complete.

Write for full details regarding loose sheets and binders.

Domestic Engineering Company

1900 Prairie Avenue ***(Catalog Dept.)*** **Chicago, Illinois**

Only Chevrolet Trucks

give you these combined advantages —in the price range of the four!

Six-Cylinder Power . . . Six-Cylinder Speed . . . Six-Cylinder Smoothness . . . Flashing Acceleration . . . Great Dependability . . . Ample Capacity . . . Wide Range of Bodies . . . And the Economy of the four!

In every section of the country, the new Chevrolet Six-Cylinder Trucks are steadily gaining in popularity—

—for here are offered literally scores of outstanding advantages never before available at such low prices.

Here is performance unapproached in any other truck in the low-price field—six-cylinder power, six-cylinder speed, six-cylinder smoothness and flashing acceleration. Here are such outstanding truck features as big, powerful, non-locking 4-wheel brakes—rugged banjo-type rear axle—and, in the Utility Truck, a 4-speed transmission.

Here is dependability that keeps the truck on the job with the very minimum of servicing. And, finally, here is outstanding economy—for not only are these new six-cylinder trucks available in the price range of the four, but they are just as economical to operate as their famous four-cylinder predecessors.

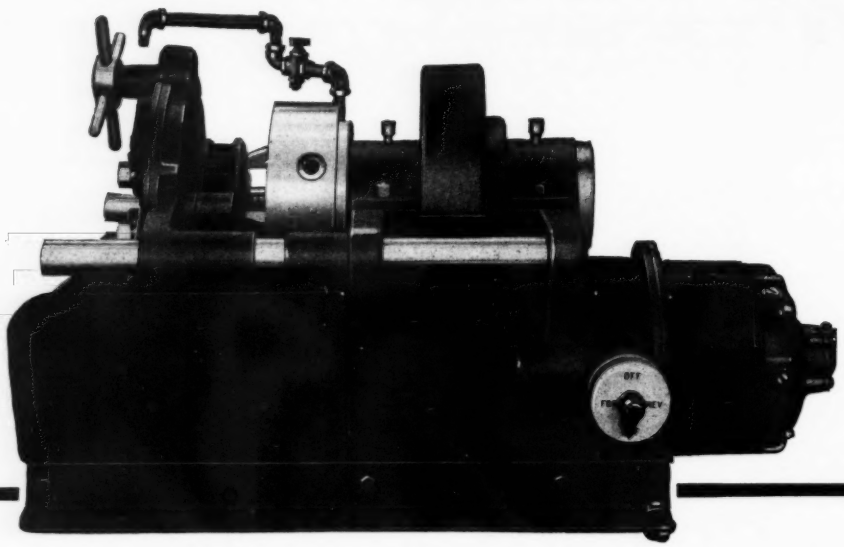
Visit your Chevrolet dealer today! He can supply a body type exactly suited to your requirements, and will gladly arrange a trial load demonstration.

CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN
Division of General Motors Corporation

Sedan Delivery $595	Light Delivery Chassis $400	1½ Ton Chassis $545	1½ Ton Chassis with Cab $650

All prices f. o. b. factory, Flint, Michigan

A SIX IN THE PRICE RANGE OF THE FOUR!



"Toledo" No. 999—

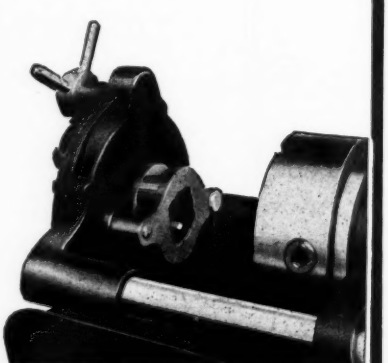
The ½" to 2" portable power pipe machine that combines speed, strength, compactness, portability and the perfect work you expect from a "Toledo." A pipe machine sensation.

THE most remarkable ½-in. to 2-in. portable power pipe machine at an unheard of price for such a quality built production machine. Equipped with Universal reversible, ball-bearing motor, it connects to a lamp socket. Specially designed cutting head with 4 cutting knives, cuts off 2-in. pipe in 14 seconds. 2-in. pipe is threaded in 30 seconds. Die heads instantly changed from one size to another. Dies easily reground when dull. Built-in oil pump. Safety friction gear protects machine if overloaded. No gears to shift. All control is centralized in the motor switch. The production is unusually high because of instant change in dies, instant change from cutting to threading and vice versa, no rear chucking, and high cutting and threading speeds. Strictly portable and easily carried by two men.

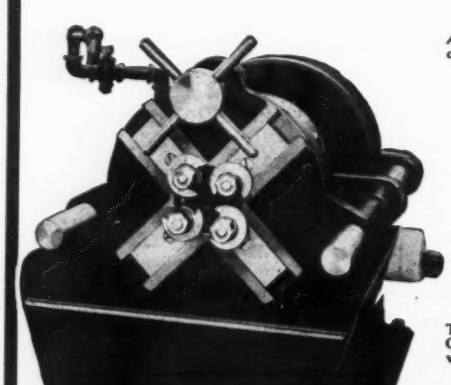
Net Price Complete $275.00

[West of Rockies $288.75] F. O. B. Toledo, Ohio, or your Jobber's Stock

The ½-in. to 2-in. portable, high production power pipe machine that you have been waiting for. Let us tell you more about this new "TOLEDO," the most remarkable power pipe machine.



The Die Heads slip on the back of the Cutting Head quickly and easily.



The Cutting Head with four Cutting Knives cuts pipe off with surprising speed.

A post card brings you complete information.

THE TOLEDO PIPE THREADING MACHINE CO. TOLEDO, OHIO

New York Office :: 72 Lafayette St.

DOMESTIC ENGINEERING
Plumbing & Heating Contracting and Merchandising

Vol. 128, No. 5
Whole No. 1899

Chicago, Illinois
September 7, 1929

OBSERVATIONS

"On the Dotted Line"

Every act of merchandising—the store and window display, the direct-mail campaign, the newspaper advertising—is directed toward bringing the contractor and the prospect face to face. And it is when they are face to face, when the prospect has shown enough interest to come into the store or to ask the contractor to call, in order to discuss a possible purchase, that most men need sales help.

The sale is not made merely because, let us say, advertising has interested the prospect in the matter of an extra bathroom in the home. The advertising has worked up his interest in the subject. He has come to the point of wanting to know more about it—where the extra bathroom can be placed, how much it will cost, on what terms he can pay for it, etc.

The moment the contractor commences his selling operation, the prospect begins to "resist." It is true that he was interested. It may be true that he actually needs and wants that extra bathroom. But human nature has a contradictory streak in it. He will not agree immediately. He will seek to delay the purchase. He will object to the price, either in the hope of getting a lower price, or of blocking the sale. He will suggest other purchases that he ought to make before installing the extra bathroom. These things are not consistent with his desire for the bathroom. But that is the problem of salesmanship—how to overcome that illogical habit of human nature.

Sales Resistance

How, then, shall the plumbing and heating contractor make the sale? What shall he say when the prospect tries to delay buying? What shall he say when the prospect objects to the price? How shall he present the matter of value versus mere cheapness? How can he lift plumbing and heating products to their rightful level in the mind of the prospect? How can he turn desire into a sale?

It is when he is facing his prospect that the average man needs the greatest help. Commencing in this issue, as a regular part of the "Plumbing and Heating Merchandising" section, is a new feature. It will be conducted by a man who has had sufficient experience in every phase of plumbing and heating sales, and sufficient personal ability as a salesman, to warrant the title "Master Salesman."

In each issue he will show you a sales situation—one that has actually been met by a plumbing and heating contractor. He will then analyze the sales tactics of the contractor and point out their strength and weakness. Thus readers of DOMESTIC ENGINEERING will have in each issue a demonstration of a successful sale—followed by an analysis of the reasons why it was successful.

A Successful Sale—Why?

We have felt, ever since commencing publication of the feature stories about successful contractors, that if we could get every man in the industry to tell us about the most difficult sale he ever made, we would have the finest sales manual the world has ever seen. We have been quietly collecting such stories; and commencing with this issue we will publish them.

The new department, therefore, conducted by the "Master Salesman" will be offering help in every issue, upon which the contractor may draw when he is faced with the task of getting the prospect's signature "on the dotted line."

The New Competition

"They mean nothing to us," says a western plumbing and heating contractor, referring to the mail order house with its local branch, and other competitors of a difficult type, "and we have them all."

We believe that to be the correct attitude. We believe that it can be taken by contractors in our field who have studied matters of merchandising and management. We say this without minimizing the competition from these types of outlets. We say it because this is not the first contractor who has taken that stand, and successfully.

The Correct Attitude

It is a matter of salesmanship and of merchandising. Let us take an example. One contractor was able to tell a representative of DOMESTIC ENGINEERING of several of his old customers who had actually bought complete plumbing equipment from a mail order house. As the matter was discussed, it turned out that these people were considered "old customers" only because, at some time during the past, this contractor had had some work from each of them. But in the period following that work, and the discovery that they had bought mail order merchandise, they had never had a letter from the contractor in question. In these days,

with modern merchandising methods at work on all sides, it is not safe to consider "old customers" as chattels, as property rights, which can not be taken away.

Not long ago we ran a feature story in our merchandising section which told how a plumbing and heating contractor in the south is "Selling in Competition with the Mail Order Catalog." That gentleman had some very valuable suggestions to offer during the sales demonstration meetings at the national convention in Buffalo. He is meeting this type of competition on its own ground and beating it. So with other contractor-merchandisers who are doing an aggressive job of selling.

Talking About "The Other Side"

Following a presidential campaign a number of years ago, in which a man universally admired and respected was defeated for the office, one of the experts on politics in the United States expressed the opinion that he had lost because he talked too much about the other side and not enough about himself. Perhaps the industry is talking too much about "the other side." It is possible to talk about problems until they loom so large that they seem insoluble. This one isn't, according to the experience of the contractor quoted in the opening paragraph; and according to the experiences of others. This type of contractor will not be eliminated by any such competition.

Wholesaler Credits

It might seem that the following quoted material was written for the benefit of our own industry. It is taken from Trade Information Bulletin No. 627 of the department of commerce of the United States, entitled, "Credit Extension and Business Failures." In the section, "Easy credit from wholesaler to retailer," the following statements appear:

Being Too Lenient

"By easy credit to the retailer is meant the wholesaler's practice of giving goods on credit to retailers who are financially weak and not very competent as business men, and being very lenient with them in the matter of prompt payment. Credit is sometimes given when it really is apparent from the beginning that the grocer will never succeed.

"The following true case will illustrate. . . . A certain grocer was studied as a prospective failure, as he is in financial difficulties. Notwithstanding the fact that this man has failed in another line of business, that one wholesale establishment has collected by the magistrate since he has been in the grocery business and another one has threatened to sue him, and that bills to other wholesalers are from 30 to 90 days overdue, goods are still being sold to him on credit.

"While a certain amount of criticism might be directed at wholesalers for helping persons not adapted to the grocery business to enter it, even more might be directed at them for their lenient credit policies, in nursing weak retailers along, even for years, after they are in business. An examination of liabilities of those merchants who failed and went through the courts is strong proof of easy credit. One man failed owing more than 50 creditors. . . . Another failed owing more than 40 creditors. . . . with bills of $400 and $500, all of which will be practically a total loss."

This was written following an investigation of conditions in the grocery trade in Louisville, Ky. It applies, apparently, to more than that one field.

One may look at the matter in one of two ways. First, a little encouragement may be drawn from the fact that our own industry is not alone in the evil of easy credits. If there is misery because of such practices, the industry has plenty of bedfellows.

On the other hand, it may increase the amazement of the observer who finds himself more and more puzzled by events in the business world. It seems incredible that men who have accumulated capital through years of work, and have invested it in a business, will permit it to be dissipated in this way. Offering subsidies to retail outlets has never been a successful practice in any line of business. Certainly it hasn't been in our own.

The Census of Manufactures

As a part of the big job of taking the national census, the Census Bureau is attempting to plan a thorough survey of all manufacturing plants, regardless of size. The smaller plants will be visited by the men who will be calling on homes. The larger plants will be asked to send reports to the Division of Manufactures.

An advisory committee has been appointed to draw up the schedules for the census of manufactures, and to decide upon the subsequent tabulations to be made.

To Help Manufacturers

"It is the intention of the committee," says a communication from Washington, "to make the census one of real practical value to manufacturers in their study of markets and to enable them to anticipate the future more certainly."

Individual manufacturers must, of course, decide the extent to which they will participate in the census, but there can be no doubt that the new spirit of helpfulness toward business, in evidence in Washington, will be made more effective by this kind of co-operation. Our national government's attitude toward business has changed greatly since it began to base its economic policy on facts rather than fancies.

Judging from the inauguration of the Trade Practice Conferences, the government is willing to act in an advisory capacity, for so long as facts are available which will tend to make business create its own corrective measures. Both business and government gain when facts replace fancies. If the census of manufactures furnishes facts to guide business and government, co-operation will be worthwhile.

Heating and Ventilating Airplanes

Fig. 1.—The heating facilities are figured to take care of a minimum temperature of —35 degrees Fahr. A temperature range of 170 Fahrenheit degrees is encountered. The extent of passenger traffic in the United States is indicated by the announcement that the Boeing Airplane Company, whose system of airplane heating is described in this article, is now completing production on a fleet of twelve eighteen-passenger, trimotored transports for service between Chicago and San Francisco, which fleet is scheduled to go into operation October 1. Heating comforts in this fleet have been given careful consideration

By ROBERT JOHNSON

DURING the past quarter-century, aviation has been developed from a precarious novelty to a commonplace but essential unit in the nation's extensive system of transportation and communication. Twenty-five years ago aeronautical pioneers achieved victory in their conquest of the air, when two of their number—the Wright brothers—accomplished the first sustained flight in a powered flying machine. Since that epochal achievement the airplane has been steadily developed and improved, and the air transport of today represents a medium of transportation not only of unprecedented speed and mobility, but also of complete comfort. During previous years the infrequent travelers utilizing the airplane were satisfied with its speed and were willing to overlook the matter of comfort. But today air travel is routine, passenger traffic is heavy and air travelers are no longer satisfied with speed alone—they are demanding comfort. With the industry in its present stage of development and with air transport operators engaging in competition for passenger traffic between a majority of the large cities in the nation, the demands of travelers must be satisfied. Today the leading aircraft manufacturers of the nation are producing transports in which are included the features of speed, safety, mobility and comfort.

The transcontinental and Pacific coast air mail-passenger-express routes of the Boeing system are the two

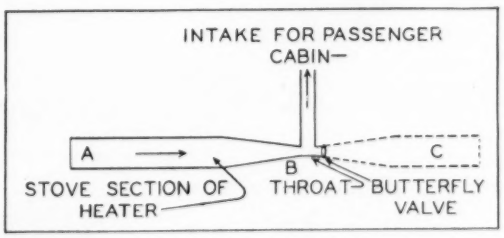


Fig. 2.—Illustration of the Venturi showing how it is employed in providing ventilation for the cabin and for directing the flow of heated air at a high velocity. Section C is indicated to show the complete Venturi tube

longest lines in the nation, and the former route, 1,943 miles in length, is the longest regularly operated air mail route in the world. In the operation of this system, the planes fly 10,000 miles every day, 4,600 miles of which are flown at night. During the two years of its operation, this one system has recorded 5,750,000 miles of actual flying.

Passenger Comfort Ranks with Speed in Importance

Flight conditions on this route are extremely varied; the topography ranges from level lowlands to lofty mountains, the flying altitudes range from sea level to 12,000 feet, and the weather includes every possible variety within the length of the trip. These conditions present a difficult obstacle for the aeronautical engineer to overcome as he plans the transport plane with the idea of effecting a comfortable ship. Inasmuch as the western division alone of the transcontinental route embraces the sunlit valley of California, the Sierra Nevadas and other mountain ranges frequented by storms, and the desert country, the variations in temperature during one flight are striking. On this route the temperature often ranges from 35 degrees Fahr. below zero to 135 degrees Fahr., a temperature difference of 170 Fahrenheit degrees while the ordinary heating system in a home is designed to cover a temperature range of 70 Fahrenheit degrees, in a cold climate. The development of a heating system to function effectively during such varied climatic conditions was indeed a problem.

General Heating and Ventilating Requirements

One of the most interesting problems in the design of passenger aircraft and one that has not been solved in anything approaching a satisfactory manner by either European or American designers, is that of proper ventilation, properly controlled, for the cabin. There are certain fundamental things that such a system must provide if it is to be considered satisfactory. These are:

1. Open windows should not be depended upon for any degree of ventilation, because the blast of air entering the open window of an airplane cabin generally is entirely too strong to permit the passenger to enjoy it in comfort, even in the warmest weather. Then, too, the passenger who opens his particular window usually gives the full benefit of the stream of air to the passenger behind instead of himself. In extremely cold weather this consideration will scarcely be appreciated.

2. There must be available sufficient fresh warm air to keep the cabin at a temperature of at least 60 degrees Fahr. even though the temperature of the outside air is 35 degrees below zero, a condition that obtains on many of the air lines in the United States during the winter.

3. There must be available sufficient fresh cool air to keep the cabin at a temperature not to exceed 80 degrees Fahr. even though the temperature of the outside air is 135 degrees Fahr., or higher, a condition that also obtains on many of the air lines of the United States during the summer months.

4. These two systems cannot be seasonal in their application. Both must be available at all times, because an airplane may meet conditions at one point where the passengers would appreciate a little heat, and an hour later find that cool air is necessary.

5. The fresh warm or cool air must be supplied to the cabin in such a way as not to create an appreciable or unpleasant draft, and it must be entirely free from any traces of exhaust gases or the odor of hot oil. The quantity of air supplied should, according to a British report, be sufficient to give a complete change of air in the cabin eight times an hour. Certainly in a small cabin with a large number of persons this is a minimum.

There are many arguments pro and con for the three-and-four-engined arrangements for passenger-carrying aircraft. As far as heating the air supplied for the cabin is concerned, it is advisable if possible to accomplish this by making use of some of the exhaust heat. Other systems have been tried in Europe but they have not been satisfactory, and such arrangements as heating by hot water are entirely too heavy for what they accomplish. When there is an engine in the nose of the fuselage, heating by exhaust heat is relatively simple, but with such an arrangement it is extremely difficult to take in

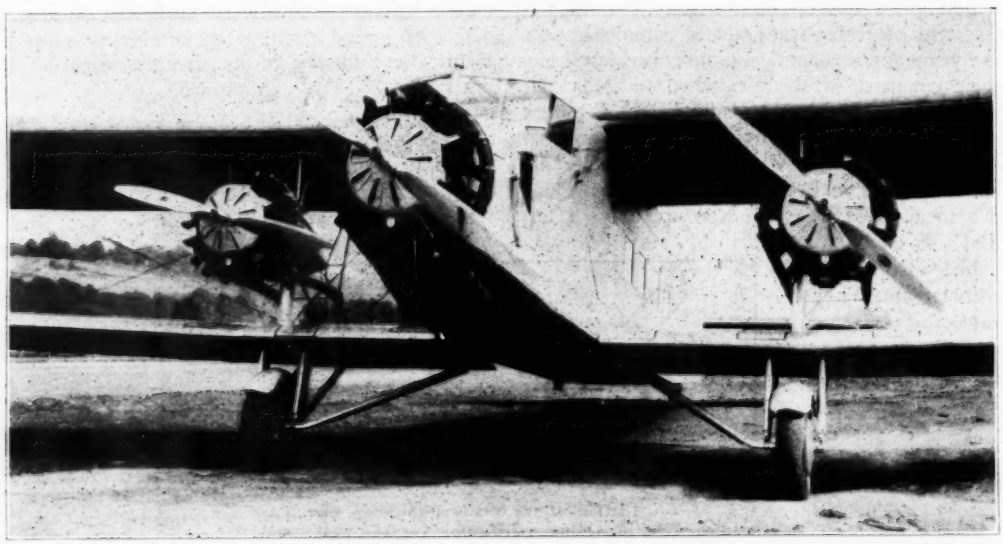


Fig. 3.—Heating is accomplished by the exhaust gas from the center engine. As shown in this view, the tail stack, or exhaust pipe, circles the radial motor and extends down under the bottom of the fuselage

air that is at all times free from traces of exhaust gas or oil smoke. This applies equally well in the attempt to secure fresh cool air, for even if the air is fresh it will have been warmed to some extent in passing the engine.

With the engines arranged in two pairs on either side of the fuselage, the question of fresh air is relatively simple, but how to make use of exhaust heat without employing too much heavy piping is a serious problem. To date but one designer in the United States has attempted to use this arrangement of engines, and but little work has been done on the development of a heating system. One difficulty with two sets of tandem engines, apart from the question of heating, is that of providing long manifolds for the rear engines to serve as mufflers and prevent flare from the exhaust at night. Any breakage in this manifold will almost inevitably cause damage to the rear propellor, and in consequence may do serious damage to the airplane.

Returning to the question of ventilation, it is difficult to determine accurately what will be the natural flow of air in the cabin of an airplane, and ventilators must accordingly be placed almost entirely by guesswork. A single inlet for heated air should be placed in or near the floor at the rear of the cabin, and if there are several inlets they should be so placed that an even distribution will be made as the air moves forward.

Cold air inlets should be high up in the rear of the cabin. Both warm and cold air inlets should be controllable by the attendant in the plane or, if there is none aboard, by the passengers themselves.

Exhaust of the air from the cabin is not so simple, and up to the present only haphazard methods have been used. Air is led in and then left to its own devices to escape through various joints that have not been made airtight. Exhaust fans are heavy and their proper placement is more or less guesswork. The European report suggests large Venturis, probably placed near the front of the cabin. But Venturis are unsightly and, if of a size sufficient to accomplish their purpose, will offer considerable resistance as they must be out in the clear in the airstream.

It is customary to place the toilet room at the rear of the cabin. In the light of the foregoing discussion it will be difficult to prevent disagreeable odors, even though such odors be those of disinfectants, from moving the full length of the cabin. This condition has been noted by a number of air travelers. The toilet room should be made as airtight as possible, and very positive ventilation should be provided for that unit alone. Most of the dry-chemical toilets now being manufactured for use in aircraft are provided with a large vent, and the end of this pipe should be provided with a very definite means for exhausting the air through it, even though this must mean a Venturi on the outside of the airplane.

The eighteen-passenger tri-motored transport described in this article was intended for transcontinental service on the San Francisco-Chicago route and, consequently, it would have to be equipped with effective heating and ventilating systems if the feature of comfort was to be a characteristic of the ship.

The heating requirements for the airplane were the supply of sufficient warm air to keep the interior of the cabin at a comfortably warm temperature—neither too warm nor too cool, and the heated air was to be fresh and untainted by engine odors. Adequate ventilation coupled with the freshness of the heated air supply is the best preventative for air sickness, a malady compar-

Fig. 4.—Interior view of the cabin. Aeronautical research has determined that the flow of air in the cabin of an airplane in flight is from rear to front. Therefore, the heat outlets are located at the rear of the cabin

able in effect to sea sickness and consequently hardly conducive to the comfort of the passengers on the air trip.

Exhaust Heat from Motor Used

At present, the most satisfactory heating system for aircraft is the type which is based on the exhaust heat, and the system used in this eighteen-passenger transport is of this type. Other heating systems are unsatisfactory because of their weight or other undesirable features.

A difficulty of the exhaust heating system is preventing traces of gas or other motor odors, such as heated metal or oil, from entering the passenger compartment. In the system developed for this transport, this condition is effectually prevented. The transport is tri-motored and, consequently, one motor is attached to the front of the fuselage, while the other two are affixed to nacelles between the right and left wings respectively. The heat from the center motor is utilized for the cabin heating system. The tail stack, or exhaust pipe, circles the radial motor and extends down under the bottom of the fuselage to a point beyond the front of the passenger cabin. The stack is made of chrome-molybdenum steel, and is 5¾ inches in diameter.

The heating units—one for the pilot's compartment and another and larger one for the passenger cabin—are made of duralumin, which is a light but strong metal and are 7¼ inches in diameter, being in the form of a cylinder. These stoves, as they are called, are placed around the tail stack underneath the compartments of the plane. Air enters the stove at the front end, which is belled out to accommodate a sufficiently great stream of air, and passes through the length of the cylinder. The tail stack, against which the fresh air flows, is heated by the exhaust of the motor passing through it, and consequently the fresh air is heated indirectly by the exhaust. The stove for the pilot's compartment is 2 ft. in length, and is placed ahead of the larger stove, to conform to the relation of the two cabins in the transport. The stove for the passenger cabin is 4½ ft. in length, and terminates in a venturi. At the end of the venturi is a butterfly valve, which is adjustable from the cabin.

The Venturi Tube

The Venturi tube is named from Venturi who first called attention, in 1796, to the relation between the velocities and pressures of fluids when flowing through converging and diverging tubes. The tube takes the shape of two truncated cones joined in their smallest diameters by a short throat piece. At the up-stream end and at the throat there are annular pressure chambers, when the Venturi tube is used as a meter for measuring the flow of the fluid, at which points the pressures are taken.

In a standard Venturi tube, Fig. 2, the velocity of the fluid rapidly increases from A to B and then decreases from B to C. From Venturi's law the pressure is greatest at A and C and least at the throat B. The pressure lost at B is temporary and is almost entirely regained at the outlet C. That pressure which is not regained is spent in friction.

While the pressure is decreased at the throat B, the velocity is increased with the result that in the case of the heating apparatus on the plane the heated air is carried into the cabin at a high velocity.

Cabin Warmed from Rear

The intake for the heating unit of the passenger cabin is at the throat of the Venturi. When the valve at the end of the Venturi is closed, the flow of heated air is diverted into the intake for the cabin, which connects with a duralumin conduit. This conduit, which is six inches in height and 1½ inches in base width, is carried along the floor the entire length of the cabin from front

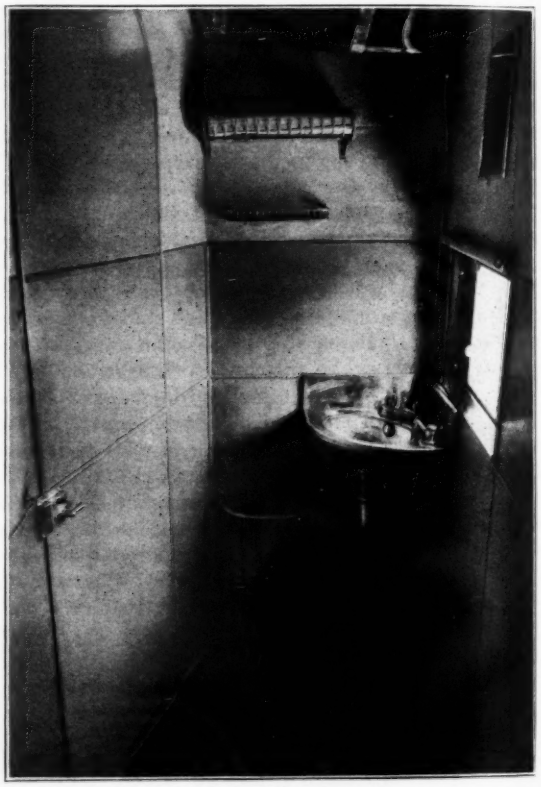


Fig. 5.—Insomuch as the air travel in an airplane is from the rear to the front and since lavatory and toilet facilities are located in the rear of passenger transports special precautions are necessary to properly ventilate and make airtight such compartments. This view shows the lavatory on a transport in service between New York City and the West Coast. Note the water storage tank above

to rear on both sides. The warm air enters the conduit and flows through it to the ends, in which are small outlets into the cabin. Aeronautical research has determined that the flow of air in the cabin of an airplane in flight is from rear to front and, consequently, the outlets for the heated air conduit are at the rear of the cabin, so that the warm air will traverse the entire length of the room. Of course, an appreciable amount of heat is thrown off from the conduit along its entire length.

When the valve at the Venturi is closed, the warm air naturally escapes from the stove, without entering the heating unit intake. It has been discovered that when the heating system is not in operation and the Venturi valve is open, the system supplements the ventilating system, for the passage of the heated air causes a suction in the throat of the Venturi.

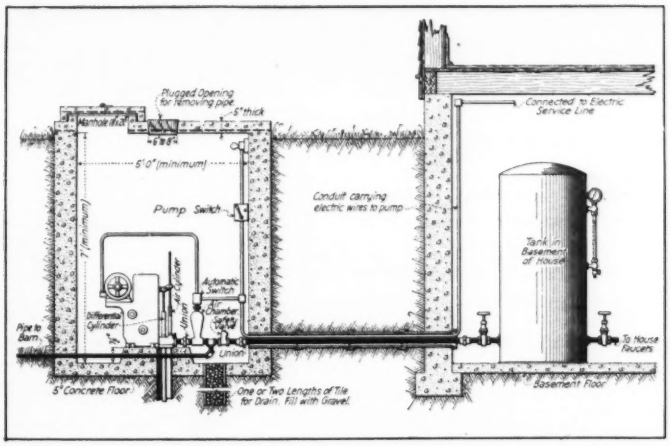


Fig. 1.—An Automatic Electric Hydro-Pneumatic Water System for a Deep Well.—If a gasoline engine is to be used for power the pump head may be placed above the ground by using a frost proof set length. A small house should be erected to protect the unit from the weather. By placing the water pipe and electric wires in sewer pipe, they are readily accessible in case of trouble

Running Water *on the* Farm

By J. P. SCHAENZER

FARMERS of the nation are desirous of securing the necessary equipment to enable them to have an abundant supply of running water in the farm home and other buildings. They realize that by having the water available at the turn of a faucet it relieves them of a great deal of work and drudgery and makes the farm a more pleasant place on which to live.

A young man purchased a farm on which was located an artesian well about twenty-five feet from the back doorstep. One of the first things he did, at a very small expense, was to pipe the water into the house for use at the kitchen sink. One day the former owner visited the young farmer to see how he was getting along. Upon seeing the faucet in the kitchen, he inquired, "Is your wife sickly?"

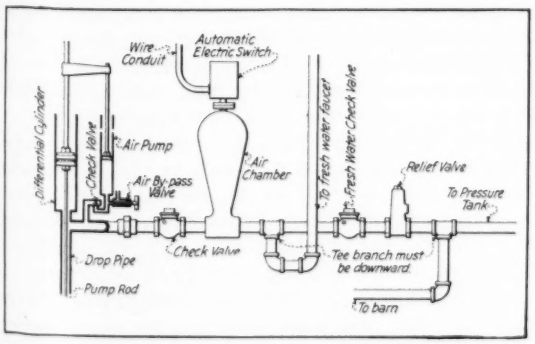


Fig. 2.—Arrangement of Fittings Used with a Hydro-Pneumatic System.—The arrangement of the tee, ½-inch pipe and fresh water swing check valve for a fresh water faucet is also shown. It is necessary that all branch lines must first go down at the point where they are connected to the main line. Otherwise when air is pumped it will escape in these pipe lines instead of going to the pressure tank

One of the ideal water supply systems for the farm is the combined hydro-pneumatic and gravity system. The house is supplied directly from the hydro-pneumatic pressure tank, Fig. 1, and the barns from the gravity supply tank, Fig. 3.

This system is especially desirable as pressure equal to city service is secured at all farm buildings. If electricity can be used for power, it is possible to make the service practically automatic and it requires only occasional attention. It furnishes water for sprinkling and gives a limited amount of fire protection.

The gravity storage tank placed in the hay mow of the barn, gives cheap storage for a considerable amount of water. This serves as protection against power or pump trouble. Low pressure is oftentimes desirable in the barn as drinking cups have a tendency to squirt or leak under high pressure.

A pump capacity of 200 to 400 gallons per hour for the average farm is adequate. These require electric motors from one-sixth to one horse power or gasoline engines from one and one-half to three horsepower. Pressure tanks from five to five hundred- or six hundred-gallon capacity are being used. Tanks from forty to one hundred twenty gallons capacity are satisfactory under most conditions and are recommended ordinarily. This is especially true where the system is automatic as the tank will be refilled oftener and the water will be fresher. By referring to Table I, it is possible to determine the total amount of water required by the household and various livestock.

Table 1

Average Water Requirements Per Unit Per Day

	Gals.		Gals.
Person—with bathroom	25	Horse	10
Person—no bathroom	12	Hog	2
Cow	12	Sheep	1

The main parts of a combination system are the following:

1. A good force pump and brass cylinder.
2. An electrically driven working head or other source of power. In electrically operated systems the motor, jack, and pump are known as the working head and constructed as a unit.
3. An air dome; a good quality disc check valve; a safety valve; an air compressor; and an automatic electric pressure switch.
4. A pressure tank tested to withstand a pressure of about one hundred pounds per square inch for the house supply.
5. A storage tank is the hay mow or other convenient place for the barns.
6. Necessary pipe and fittings.

A good cylinder of proper size should be used as this is the heart of the whole system. Being inaccessible for frequent inspection and repairs and the entire system being dependent upon its efficient and uninterrupted operation, nothing but the best should be purchased and installed. The check valve at the bottom of the cylinder and the plunger are operated by springs. No springs

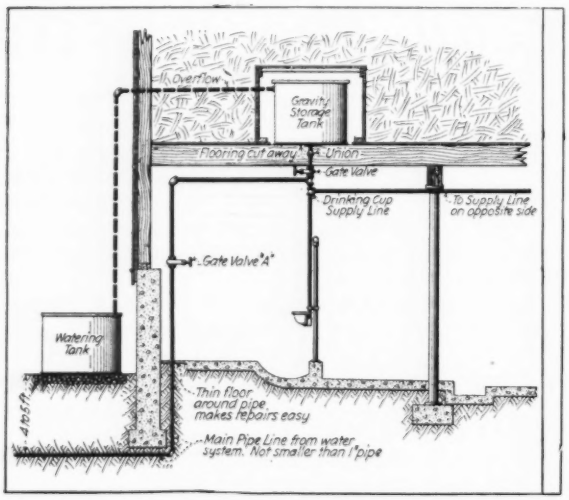


Fig. 3.—Gravity System for the Barn.—An ordinary stock tank may be used. Gate valve "A" is opened for filling the tank

are used with ball valves. Two or three leathers should be used on the plunger or piston.

The cylinder should be placed under water and on the extreme lower end of the drop pipe, and thus it cannot lose its prime. Tail pipe below the cylinder often times cracks or breaks the cylinder due to vibration. Also, it oftentimes works loose and falls to the bottom of the well. The power required for pumping is no more than when the cylinder is placed above the water.

The size of the cylinder depends upon the capacity desired. A two- to three-inch cylinder is usually adequate for the average farm. A smaller pump working for a longer period of time is just as satisfactory and less expensive to install than a larger system. A seven- or eight-inch stroke is ordinarily used although in most cases it can be adjusted from six to nine inches. The number of strokes is usually thirty-five to forty per minute.

Two types of cylinders, the closed or the open, may be used. The closed type of cylinder uses a drop pipe smaller than the cylinder. If the plunger needs repairs it is necessary to pull up the entire drop pipe and cylin-

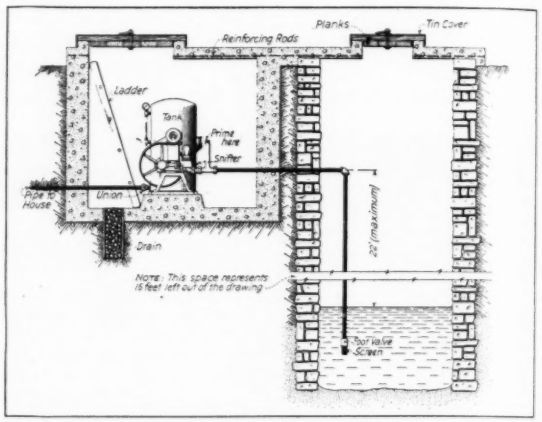


Fig. 4.—An Electric Hydro-Pneumatic Shallow Well System.—This may be placed in a pit as shown or in the basement of a house if the distance does not exceed 100 ft. The manholes have a 2-inch shoulder to prevent surface water from entering the pit and well. The covers are made from planks and covered with tin which comes down over the shoulders around the hole

der. In the open type the drop pipe is the same size or a little larger than the cylinder. This enables one to remove the pump rod, piston and check valve at the bottom of the cylinder without pulling up the cylinder and drop pipe. The larger drop pipe, however, is more expensive to install, especially if the well is deep, and harder to handle due to its weight should it be necessary to pull it up.

An ash pump rod with metal connections is in some ways preferable. It is light, quiet, durable and does not produce sudden heavy loads on the motor and gears at the beginning of each stroke. At the same time it is usually necessary to use a two-inch drop pipe with it, because of its larger size while a one and one-quarter-inch pipe is large enough for a steel pump rod.

A differential cylinder is to be preferred at the upper end of the drop pipe and prevents the water from escaping or leaking out where the pump rod enters it. It helps to equalize the load on the motor as it controls the flow of water and allows it to escape constantly. However, it is more expensive than a stuffing box.

Placing the working head and pump in a pit makes a satisfactory installation as shown in Fig. 1. It saves the cost of a frost proof length and being underground prevents freezing. Better lubricating of all working parts is also secured during the winter months. By elevating the motor and pump on a block of concrete or a wooden platform, it will be protected against a small amount of water which may seep into the pit. The electric motor gets quite warm while working and keeps itself dry in an automatic system which operates several times a day, provided no free water gets on or into the motor. Gear or chain drive should be used.

When a gasoline engine is used for power it is nec-

(Continued on Page 95)

Looking *for* Heating Trouble

The Smoke Pipe

ARTICLE No. 4

By ROBERT R. KENWORTHY

RUNNING back over the notes on various troubles I have encountered with heating plants, I find that there are a few troubles found here besides the common one of corrosion of the smoke pipe in ordinary wear. It suffices to say that a badly rusted smoke pipe is about as useful as no smoke pipe at all.

The ideal way to care for a smoke pipe is to keep it as clean as possible throughout the heating season. At the close of the season remove and clean it, then paint it on the outside with good smoke pipe enamel and on the inside with a graphite mixture to counteract the ill effects of any corrosive elements deposited on it which are not removed by the normal cleaning process. Wrap it in paper and store it for the summer months in a good dry place. In the fall it will be found to be in good condition for use. It is known that in many cases the summer months are more damaging to the smoke pipe than the whole winter's usage.

One instance of summer damage was found where the usual complaint of "poor burning" was made. The boiler was cleaned in the early part of the summer and the smoke pipe entirely renewed at that time. When I saw the job it was late in the fall. The boiler was set in the corner close to the chimney and in such a manner that the smoke pipe was not readily accessible for close inspection. The chimney clean-out was accessible. The fire indicated a shortage of draft. There was a good flue and the visible section of the smoke pipe gave no indication of the source of the trouble. Where, then, could the trouble be? A burning match held before the open fire door responded quite normally. With the drafts turned on a similar test was made at the ash pit door. The result was that the flame of the match was not affected at all by the draft at that point. That proved that there must be some point of admission for the air other than through the fire bed and that that point had a low resistance for the fire bed was very thin. Climbing over the top of the boiler to check up on things at the back we literally bumped into the source of the trouble. A water pipe momentarily stopped our journey. It passed directly over the back edge of the smoke pipe and had spent the summer sweating and dripping onto the new smoke pipe. The result of the constantly dropping water had been disastrous. Rust had won its battle in short order. After renewing this smoke pipe, we had a gutter of tin hung below the water pipe so that next year the sweating pipe cannot drip on the smoke pipe. Wherever pipes of any kind pass below a water pipe that is apt to sweat, use the precaution of hanging a short gutter to protect the lower pipe.

Another case of smoke pipe trouble was found in a house where the good judgment of having the boiler overhauled in the summer had been practiced. Here a new smoke pipe was put up apparently by a handy man. After removing a 12-inch pipe some eighteen ft. long he had substituted a 10-inch pipe. On a short run it is sometimes possible to get good results with an undersized pipe but, certainly, never on a long run should a small pipe be used. When called to account for the change the installer stated that the old pipe had been of the same size as the pipe he had used. Never the less when the proper size of pipe was later installed the fire regained its normal vigorousness and the troubles disappeared, so regardless of the installer's claims we are convinced that he did not use the same pipe as had been originally used and we definitely know that he used a pipe smaller than that called for by the collar of the boiler.

Lack of Pitch Common Trouble

A common error in smoke pipe installation is lack of pitch. No matter how short a pipe may be it should run upward toward the chimney if good results are to be obtained. A perfectly level pipe that is very short will not give any great evidence of inefficiency but a pipe that pitches downward has in effect a reduced area and will be felt in even the shortest runs. Smoke and gases travel with a sort of swirling motion and tend to rise. Therefore smoke rolls along the top of the pipe and not the bottom. If the top at the point of admission is higher than it is at the point of emission there is a pocket which when filled becomes useless area in the section of the pipe. Try to give the smoke pipe at least one inch of upward pitch in each foot of length. Back pitch of a smoke pipe is frequently the cause of discharges of smoke from a fire door.

Make Leaders Larger

A boiler was designed with a collar to take a nine-inch smoke pipe. A man in discussing the installation of a smaller pipe asked this question:

"What is the use of using a nine-inch pipe having a free area of over sixty-three square inches in its cross section and entering it into a so-called eight by eight flue tile which has a net free area of approximately fifty-three square inches?"

The leaders for all pipes going above the first floor are at least fifty per cent larger than the corresponding riser itself because the heated air travels directly upward so much more easily than it travels on a nearly horizontal plane. In the design of smoke pipes, it is desirable to have the free area of the tile equally as large as the smoke pipe, if not even a little larger, on account of the losses of effective area due to the circular motion taking place within a rectangular enclosure. If

the difference is not too great, however, we may still use a tile that is somewhat smaller than the pipe entering it and offset the limitations by increasing the velocity during its upward travel. This will call for a slightly higher stack temperature than would otherwise be necessary yet the use of a smaller smoke pipe would still require the stack temperature if the combustion rate is maintained, and with the smaller pipe the resistance will be larger during the horizontal pull.

Excessive Length of Smoke Pipe Should Be Avoided

A common fault with smoke pipes is excessive length necessitating too little pitch. An example of this condition was found in a most extreme case where the smoke pipe came from the boiler and was carried along the side walls of the basement a distance, by actual measurement, of thirty-nine feet. Had the pipe been run direct, it would have necessitated slightly over thirteen feet which in itself would have been very long considering the small amount of pitch which was possible from the boiler to the chimney. The reason for the added length was the insistence of the owner to have nothing obstructing the drying room through which it would otherwise have passed. The result is that the extra amount which the owner pays annually on his fuel bill would probably have paid the difference between the cost of having the washing done at home and sending it to the laundry, with a liberal margin to spare.

Another instance of inferior smoke pipe construction came in conjunction with a case of too low a chimney. Here the owner consulted the writer with regard to the advisability of installing a blower. He was troubled with the persistent emission of smoke from the fire door. Needless to say we arranged to have the chimney raised. We also installed a new smoke pipe. The original pipe came out from the back of the boiler with a T, on the end of which was the check damper. The other leg ran horizontally about 2 ft. where it turned at a right angle upward for a short distance and then another turn to the horizontal to reach the chimney. Three right angle bends were used where two adjustable forty-five degree bends were easily substituted to do the same work. The check damper was then mounted on the side of the smoke pipe with a suitable casting. This change provided a pitch of nearly three inches to the foot and together with the higher chimney eliminated, entirely, the trouble with smoke and improved the combustion in the boiler.

The last specific case of smoke pipe trouble that I want to mention is one that shows poor judgment in planning a job. This, too, is a case of too long a smoke pipe which was used in the basement of a store. The pipe was at least 20 ft. long and hung haphazardly on poorly secured wires. It sagged badly here and there, and the joints were leaking as a result. Naturally the draft was poor. There were pockets for the accumulation of soot. There were high spots giving traps that limited the effective area of the pipe from above. The installation of the smoke pipe in such a place as a store basement where it is apt to be knocked should be done with much care. Each joint should be pinned securely so as to be entirely rigid and each section of the pipe should be supported by two wires. These wires should be anchored as far apart as the distance from the pipe to the ceiling and should wrap around the pipe once so that they may cross each other and be twisted in the manner of a doctor's tourniquet. This serves to adjust the tension and to pitch the pipe evenly throughout its whole length.

Items to Be Remembered About Smoke Pipes

In the course of considerable investigating of heating plants both in large and small homes there are several things that are worthy of mention in connection with smoke pipes. These, in my opinion, are the most important and are submitted as suggestions picked up from the practices of many good craftsmen whose work I have seen:

Always make the smoke pipe the same size as the collar of the equipment. This is right for normal combustion.

Always pitch the smoke pipe as much as possible—never less than one inch to the foot.

Avoid the use of sharp bend in the smoke pipe.

Run the pipe as nearly straight from the plant to the chimney as you possibly can.

Wherever possible run the pipe to the wider face of the flue so that it does not have to be reduced to an oval at the point of entry.

Where two or more boilers are used on a common smoke pipe, be sure that it is amply large to handle all pieces of equipment to be used at any one time. Each branch must be equipped with a tight shut off damper.

In smoke pipes of unusual design or difficult construction use extra heavy material, say fourteen or sixteen gauge, mounting the pipe permanently in specially formed strap iron hangers and providing suitable hand holes or man holes for clean out purposes. The initial cost is greater but the final results are so much better that the cost is justified on even a relatively small job.

The smoke pipe is far too important to entrust to any one to design unless he is thoroughly experienced and understands just what he is doing. Too often it is the one false note in the heating plant which shows poor workmanship.

PLUMBING & HEATING MERCHANDISING

A brief review of the thirty-eight feature sections covering practically every phase of merchandising in a practical way, as part of a program leading to the help offered by

THE MASTER SALESMAN

whose first demonstration is in this issue

THIS is the thirty-ninth of the special Plumbing and Heating Merchandising feature sections published by DOMESTIC ENGINEERING. They grew out of the feature stories about merchandising which have been published since the field first became interested in selling.

In commencing the publication of the feature sections DOMESTIC ENGINEERING had in mind a rounded out program. The idea was to present first a comprehensive survey of general merchandising methods in our field. In pursuance of this design we have had feature sections on the following subjects:

Postage Stamp Merchandising.
Retail Store Merchandising.
Merchandising Through Salesmen.
Selling the Portable Repair Shop.
Merchandising Water Heaters.
Association Campaigns.
Selling the Remodeling Job.
Christmas Gift Merchandising.
Selling the Heat by Radiator Idea.
Newspaper Merchandising.
Training Journeymen.
Special Sales Campaigns.
Co-ordinating Merchandising Efforts.
Selling Against the Mail-Order House.
Window Display Merchandising.
The Bath a Day Campaign.
Color in Plumbing Ware.
Co-operative Showrooms.
Selling Specialties.
Farm Merchandising.
Window Lighting.
Merchandising the New Store.
Letter Campaigns.
Sales Following Service Calls.
On important developments in

First Letter

Dear Sir:

Your face used to be more familiar to us than the folks in the family album, but we have missed your business and your personality around here the last year or more, so we are writing to find out what happened.

If our service was not just right or our plumbing unsatisfactory, we want to know about it and do the right thing. We don't want a single dissatisfied customer on our books.

Our business has been built up by leaps and bounds, and we don't want to leap backward and then retrace our steps. If we are to blame, just use the enclosed postcard to tell the sad story--or telephone me about it personally--calling Cleveland 5321.

Cordially yours,

Second Letter

Dear Sir:

Last month we wrote a few of our old friends about the family album. The response was most gratifying. Most of them said there was no real intention to slight us.

We hope this is your case, but we are not completely satisfied, because you are one of the few who have not yet replied. Won't you let us put your picture back in the old family album?

If we gave you poor service or unsatisfactory plumbing, we want to know about it so we can make it right with you. Won't you help us out in this predicament by using the enclosed postcard telling us the sad story--or telephone us about it--Clev. 5321.

Cordially yours,

Third Letter

Dear Sir:

Out of one hundred letters sent out we got sixty old customers back on the books! That's a good record, isn't it? But we are not completely happy yet, for you are one of the remaining forty. Now we want to make a clean sweep of it, and for a limited time only--namely, from January 10-20--we are going to allow you a special discount of ten per cent on all purchases made during that time. Is that a sufficient inducement to tell us why we don't get your business any more?

Cordially yours,

P. S.--Your name is still on our active ledger. Your charge account is satisfactory--why not use it?

Three letters used successfully to keep old customers on the books

selling, such as the remodeling movement (which DOMESTIC ENGINEERING was the first to call to the attention of our industry) we have had a number of feature sections. We have had six sections given over to methods of selling remodeling jobs. We have had two sections on Christmas merchandising. Also on the subject of remodeling we created a newspaper campaign of ten advertisements, covering plumbing and heating, which was used to a great extent in cities all over the country. As we developed the service, calls were made on us for help. Thus we have suggested designs for floats, have published our own chart of color harmony for the use of the plumbing contractor, so that he might offer authoritative help to the customer wanting to plan a colored bathroom.

The Aim of Merchandising

The plan, of which these feature sections are a part, also took this fact into consideration: Every merchandising effort, every advertising effort, has in view the bringing of the prospect and the contractor face to face. Very little merchandise of the type handled by the plumbing and heating industry can be sold by advertising alone. There must at some point be personal contact between the contractor and his prospective customer.

He must understand, first, of course, something about general merchandising. But, in order to make his general merchandising effective, he must know something about personal salesmanship. So, having laid what we conceive to be a very sound foundation of general merchandising training in the years during which this material has been appearing in our pages, we are adding to this feature section that part (commencing in this issue) which deals with personal selling. And, as the material in the sections has been practical, so will this new material, prepared by "The Master Salesman," be practical. It will not merely describe or enumerate sales principles. It will demonstrate actual sales, and analyze them. "The Master Salesman" will take actual examples of sales from the field and show the strength and the weakness of the selling tactics employed by the contractor.

YOU ARE IN ONE OF OUR ZONES
Our Repair Trucks are in this Zone twice each week
Save Money on Your Plumbing Bills

There are two very logical reasons why the Zone System saves you money on your Plumbing Repairs.

First, all work done under the Zone System must be paid for upon completion. This eliminates the cost of bookkeeping and collections, for which the customer pays in any credit business.

Second, you pay only for actual time mechanic is on your premises —no trips back to the shop at your expense. No charge for coming or going to or from your premises.

The Zone System enables us to make a charge of only $1.00 for the first one-half hour or fraction thereof and 50 cents for each subsequent one-quarter hour or fraction thereof—a great saving over usual plumbing charges. Services of helpers are reduced to a minimum of 50 cents for first one-half hour and 20 cents for each subsequent one-quarter hour or fraction thereof. Satisfactory Materials and Workmanship **Guaranteed.**

The above rates apply to Zone System Service.

For emergency repairs or special work which must be done on days when our trucks are not in your Zone, we provide prompt service, the minimum charge for which is $2.25. This is the regular plumbing service at regular rates, to take care of emergency work.

Unless your need is an emergency need, use Zone Service. It saves you money.

HASKELL PEUMBING CO.
Bryan and Peak since 1910
Telephones H-2088 and U-2254

A Review

As an immediate preparation for this new service, we want to review briefly some of the practical merchandising ideas which have been successfully employed by plumbing and heating contractors, as reported in the feature sections. From the feature section on direct-mail we take the letters which are reproduced in this section as representing a successful effort on the part of Service Plumbing & Heating Co., of Chevy Chase, D. C., to keep old customers on the books. That section also contained instructions for keeping a prospect and customer file for follow-up and a splendid postal card campaign.

In the sections on retail store merchandising there have been a number of very good suggestions.

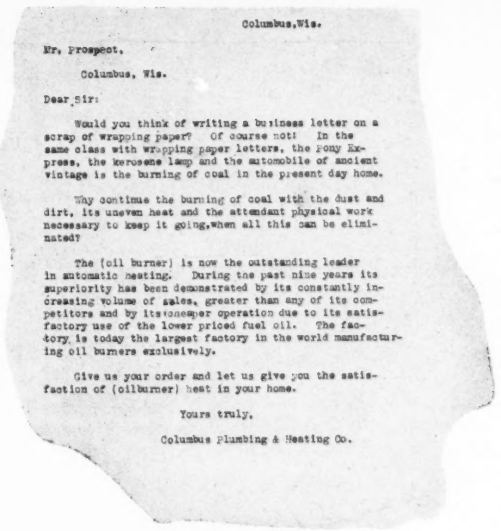
A RECORD OF 10 MONTHS' SELLING, SHOWING VOLUME, COST AND PROFIT

	SALES		Contract	Cost	Total Profit	Commission	Net Profit
7	Oil Burners		$ 4,869.00	$ 3,543.49	$ 1,325.51	464.00	$ 861.51
9	Economizers		2,126.83	1,689.24	437.59	172.50	265.09
22	Plumbing and Heating Sales	$ 5,412.56					
20	Gas Heaters	868.00					
21	Gas Burners	2,214.90					
10	Miscellaneous	555.75	9,051.21	6,455.93	2,595.28	720.47	1,874.81
89	Sales—Totals		$16,047.04	$11,688.66	$ 4,358.38	$ 1,356.97	$ 3,001.41

10 Months' Drawing Account, $2,600.00
ESTIMATED SALES NEXT 6 MONTHS

5	Oil Burners	$ 4,000.00
3	Dishwashers	600.00
5	Economizers	1,500.00
5	Laundry Dryers	825.00
10	Gas Burners	1,200.00
5	Incinerators	800.00
	Plumbing and Heating Sales	5,000.00
	TOTAL	$13,925.00 (Six months' drawing account, $1,560.00.)

Perhaps one of the best is the scheme worked out by William Beck, of Englewood, N. J. Every year the Becks—father and son—made a practice of securing the services of someone like the domestic science teacher in the local high school, or of the editor of the household page of the local newspaper. Then, with the finest type of range carried, in full view of the sidewalk, a cooking demonstration was given, and those who dropped into the store were allowed to sample the food. The cook and her assistants fed an average of 1,000 persons a day for three days. Names of visitors were secured and followed up. On a range selling for $225, twenty-five to thirty would be sold in the period immediately following the demonstrations.



Columbus,Wis.

Mr. Prospect,

Columbus, Wis.

Dear Sir:

Would you think of writing a business letter on a scrap of wrapping paper? Of course not! In the same class with wrapping paper letters, the Pony Express, the kerosene lamp and the automobile of ancient vintage is the burning of coal in the present day home.

Why continue the burning of coal with the dust and dirt, its uneven heat and the attendant physical work necessary to keep it going,when all this can be eliminated?

The (oil burner) is now the outstanding leader in automatic heating. During the past nine years its superiority has been demonstrated by its constantly increasing volume of sales, greater than any of its competitors and by its cheaper operation due to its satisfactory use of the lower priced fuel oil. The factory is today the largest factory in the world manufacturing oil burners exclusively.

Give us your order and let us give you the satisfaction of (oilburner) heat in your home.

Yours truly,

Columbus Plumbing & Heating Co.

This letter was unusual—it was written on a piece of torn wrapping paper

A number of plumbing and heating contractors have taken on specialties and have employed salesmen to push their sale. Immediately, of course, various questions of sales management arise. How should salesmen be paid—on commission or salary basis? What can a man be expected to do in selling? We reproduce herewith a table showing ten months' selling efforts on the part of one salesman, and his estimate for the following six months. The first ten months did not, of course, leave a thoroughly successful margin of profit; but the following six-month period would equalize matters.

All agree that it is necessary to keep a close check on the work of salesmen. Weekly meetings and sometimes daily meetings are held. The McAuliffe Plumbing & Heating Co., of Indiana Harbor, Ind., worked out a plan of keeping daily records on a blackboard. One interesting phase was the record of demonstrations of a washing machine as compared with sales. From an early record of four or five sales out of twenty-five demonstrations, the organization had worked out its sales efforts so that the following record was made:

4 demonstrations, 5 sales
2 demonstrations, 1 sale
7 demonstrations, 5 sales
5 demonstrations, 2 sales
1 demonstration, 1 sale

the figures representing the work of five salesmen.

Securing Prospects

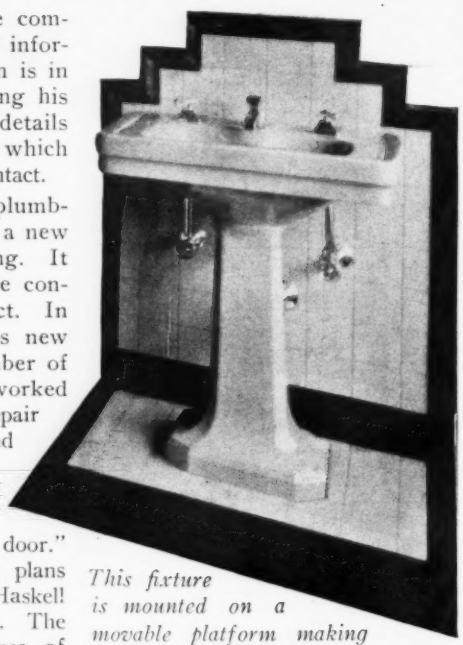
One of the most interesting plans we have published was that of Apex Heating Company of Philadelphia, Pa. The first job, is, of course, to secure prospects. Some firms have, after securing homeowner lists, perfected those lists by paying a small sum to women who make calls on the homes and secure information as to what plumbing or heating equipment is in use. Mr. Henneberry of the Apex Company, has gone a step farther. A list of people living in their own homes is placed in the hands of a man who is not strictly a salesman. His job is to do the preliminary work. He calls on home owners, tells them about the Apex Heating Company, discusses their heating needs, tells them something about the company's time payment plan of selling and endeavors to build up a desire in the household for more information. This accomplished, he makes an

One of the best of the co-operative showrooms

appointment for one of the company's salesmen. With the information secured the salesman is in a splendid position in making his call. He has many of the details concerning his prospect which make it easier to establish contact.

The completely equipped plumbing repair truck has offered a new opportunity in merchandising. It has, in a sense, brought the contractor closer to his prospect. In calling the attention of this new service to the public a number of interesting ideas have been worked out. Some have compared repair costs under the old method and under the new. All, of course, have stressed in one form or another the thought of "the plumbing shop at your door." One of the most interesting plans was worked out by the Haskell Plumbing Co., of Dallas, Tex. The city was divided, for purposes of service, into zones. Billboards and circulars called attention to this division and suggested that use of the zone system, for other than emergency calls, would save the customer money. One page of a circular which fully explains the system for the customer's information is reproduced.

The very last word in the use of the completely equipped repair truck would seem to be with those who, like W. H. Picard, of Oakland, Calif., use the truck as a real traveling display. The photograph which is reproduced in this section shows one of Mr. Picard's "Traveling Stores," as he calls them. They really bring to the door of the home owner a wide variety of plumbing and heating accessories and small fixtures. They have been an important factor in building prestige and sales.



This fixture is mounted on a movable platform making quick changes of position possible

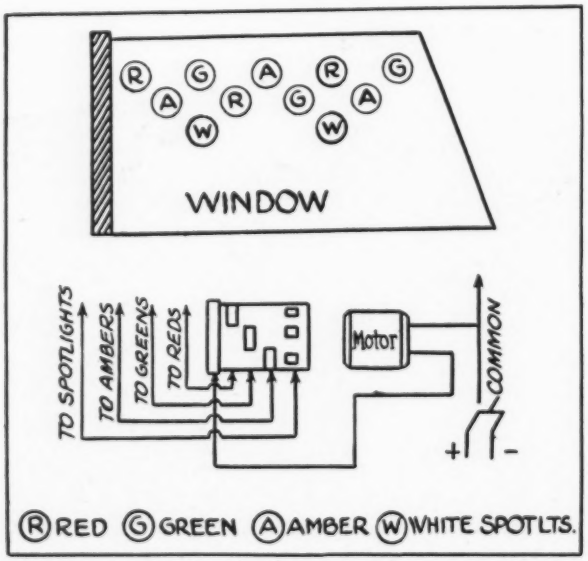
Selling Radiator Heat

On the subject of selling the "Heat by Radiator" idea, several practical ideas are worth repeating. A. S. Blunk Heating Co., of Louisville, Ky., developed a method of securing names of prospects over the telephone. As B. M. Blunk, head of the sales department described the method: "We are getting hundreds of tips by telephone. We go down the street and call each number, find out how they are heating their home, and outline each of our products to them." It seems rather an unusual method, but it has worked in this case. "We are averaging six tips out of every ten calls for some form of heating equipment, service or repairs," he said. As a matter of fact, there is a great deal of selling going on over the telephone in other fields.

Another source of prospects is a file kept of "lost orders." In other words, where a job has not been secured, a record is kept and within a year or so the owner of that home is considered a prospect for Blunk service. The immediate suggestion is an inspection service, as described in the letter reproduced.

One of the most unique ideas encountered was that used by D. F. Farrell & Co., of Pittsfield, Mass. In that community there are about six heating systems in general use. Terrance A. Truden, heating engineer for the company, has had prepared a perspective elevation of each of the systems. Attached to each drawing is a list of the advantages of that particular system. Here, for instance, are the selling points listed for one of the drawings: Sufficient radiation, proper size boiler, circuit piping, noiseless —operates on 8 oz., all air expelled in basement, automatic operation, supply valves graduated at top of radiator, return valves thermostatic, alternating receiver and positive return of condensation, vent valve has vacuum feature and sensitive damper regulation. With those points listed the salesman is in no danger of overlooking one or more when talking with the prospect, and can show drawing where necessary,

A practical wiring diagram which was found usable



A WATER SYSTEM FOR EVERY HOME
SHE DESERVES IT
HE HAS EARNED IT
A CONTRAST IN CONVENIENCE CLEANLINESS AND COMFORT
SATURDAY NIGHT
NOT EVERY SATURDAY NIGHT
ANY NIGHT
A WATER SYSTEM IS A WISE INVESTMENT BECAUSE
1. IT INCREASES THE SALES VALUE OF THE PROPERTY
2. IT INCREASES THE EARNING CAPACITY OF MAN AND WIFE
3. IT LASTS MANY YEARS, THUS DEPRECIATES SLOWLY
4. IT DOES NOT INCREASE COST OF OPERATION
5. IT WILL PAY ITS COST

A poster showing the reasons for a bathroom in the farm home

to explain the selling points so that the prospect will understand.

Co-operative Showrooms

Much has been written about the need for co-operative selling effort. There is a general feeling that, since so many groups have combined to merchandise the products of their industries, the plumbing industry ought to meet this type of selling with group efforts on its own part. One form which this group selling has taken is the co-operative showroom. A most exhaustive study of the subject was made and the complete story of the efforts in Montclair, N. J., in Wins--ton-Salem, N. C., in Orange, N. J., and in Clarendon, Va., published in one of the feature sections.

Naturally, interest has centered on the practical management details. The most difficult point seems to hinge on just how prospects are to be handled and who among the members is to have the business which is created by the showroom. In the Orange showroom, no direct sales are made, except when master plumber members bring or send in prospects who are to be shown a certain product. In this showroom, $14,000 in sales were made in the first nine months.

The Montclair, N. J., plan called for the employment of a woman to take charge of the exhibit during the day. Prices were affixed to the products displayed so that she might have full information in talking with prospects. When such a prospect visits the showroom and is desirous of going through with a purchase, he or she is asked the name of the plumbing contractor regularly employed. If the prospect names a plumber, that settles the matter, of course. If not, he or she is given a list of the members of the association, alphabetically arranged, and then every member is notified. In the evening, there is always some one of the members in attendance. There is a regular "duty roster" by which the men rotate in their turns for evening attendance at the showroom.

In Winston-Salem, N. C., when the elaborate showroom was opened up, it was with the general idea that all individual displays, including the wholesalers' would be abandoned. Here, under H. H. MacKenzie, secretary and manager of the local association, the showroom functions as a central exhibit and perfect confidence is placed in Mr. MacKenzie's distribution of such business as the showroom creates.

In Clarendon, Va., the members of the Associated Master Plumbers and Heating Contractors of Northern Virginia formed an organization known as the Plumbers Display Room Company and established a showroom. The company was financed by six of the members of the association with the hope that eventually other members of the body would participate in the project.

The details of operation are different from the others mentioned. All merchandise on display is placed on consignment and insured. The six men rotate in their attendance, each taking a day from ten in the morning until ten in the evening. Sales and profits are handled as follows: All sales of things on display at the store belong to the company, no matter who sells them. However, any other business secured by the man in charge on any particular day belongs to him. All profits made by the company are put into a common fund and are to be paid as dividends. It cost each member approximately seventy-five dollars as his share of the expense of opening the showroom and the cost per month was estimated to be about ten dollars per member.

On the subject of display, we call especial attention to the splendid feature article published in April of this year on "The Pulling Power of Well-Lighted Windows." This was written by an illumination engineer and in it were given wiring schemes for three types of

stores—a metropolitan store, a main street store and a side street store. In this feature section we are showing again the wiring diagram for a three-color and spotlight window illumination. It is interesting to know that almost immediately following the publication of this article this last diagram was used by a plumbing and heating contractor just then opening a new store.

Special Sales Drives

A number of interesting special campaigns to sell specialties of one kind or another have been outlined in the feature sections. One plan was used with success by Bareham & McFarland, of Rochester, N. Y., to sell heating units to farm and outlying homes. This was done during the month of August when such sales are not easily made. First the sales staff of eight men made a check of the heating requirements of the territory. It was divided into four teams and for a month before the opening of the campaign, each team was put to work to visit every farm house and each had to turn in at least one hundred good prospects. The campaign was then opened in August, the special feature being the offer of a half-ton of coal with each unit purchased. A novel traveling exhibit was rigged up, one of the heating units being placed in an old "jitney bus" which each team was allowed to have every fourth day. This plan, with the difference that women were employed to secure prospects' names at so much per name, was used successfully also by the Pulte Plumbing Co., of Grand Rapids, Mich. They took the heating unit into the neighborhood of factories during noon hours and there demonstrated it on an open truck.

Another method of securing prospects, which might be touched on here, has been used successfully by such firms as the John J. Vogelpohl Co., of Cincinnati, Watt Plumbing & Heating Co., Tulsa, Okla., and Springer Plumbing & Heating Co., Inc., of Oneida, N. Y. It is aimed at securing the attendance of large numbers of women at demonstrations held in these stores. Here the various appliances are described. Food is served out of the electric refrigerator or cooked on the gas range. Contact is made with women's clubs and church organizations in promoting these demonstrations, and for each name secured, or each sale to a person who has attended the demonstration, a sum of money is offered the organization whose members attend.

A truck that is a merchandising billboard

On the matter of selling the farmer, all contractors who are interested in this type of business agree that it is necessary to make personal contact—the farmer cannot be sold in any other way. And the personal contact must be supplemented by demonstration. Most of the men who are successfully selling the farmer water systems, for instance, have a demonstrating unit mounted on the truck and let the farmer see just how the system works. After the water system has been installed, it is only a matter of keeping contact to secure the additional business of equipping the kitchen and bathroom.

There is space to touch on only two additional subjects. One is the fact that the merchandising of colored ware has been covered most thoroughly in two feature sections. In the last one was given an authentic color chart, which will enable the plumbing contractor to offer real help to his customer in planning every detail of the bath room in color.

The Remodeling Movement

The other subject is remodeling. As mentioned previously, DOMESTIC ENGINEERING first called the attention of the plumbing and heating field to the movement which has grown so greatly in the past year and a half. In that time every effort has been made to secure and publish effective merchandising campaigns, by which plumbing and heating contractors were building a volume of this profitable type of business in old homes. We have published survey figures to indicate the extent of the market nationally, we have given the method for figuring the extent of a local market, we have prepared special copy for contractors requesting it. Also we published a series of ten remodeling advertisements, five on heating and five on plumbing. This series was enthusiastically received and it is estimated that the contractors making use of this campaign reached something in the neighborhood of 5,000,000 people in a period of about twenty weeks.

All this, as was said in the introduction to this section, has served as preparation for a more definite service. We shall continue

to seek practical merchandising stories from the field. In addition, this section will carry the new feature by "The Master Salesman." He is a man who is familiar with every phase of plumbing and heating by reason of years of selling and contact with all branches of the industry. He knows the contractors' problems and has helped men time and again with difficult sales situations, as he is going to help the readers of DOMESTIC ENGINEERING by his sales demonstrations.

Every merchandising effort leads to the moment when the contractor faces his prospect. And, for that moment, "The Master Salesman" plans to bring all the practical assistance he can give after years of intensive study of sales situations and the practice of salesmanship on his own part, which gives him the right and the ability to offer authoritative advice.

Many sales manuals are published each year, ranging from simple descriptions of the principles of salesmanship to highly technical books in which there is a great deal of psychology, difficult for the average person to understand. We have always felt that, if every man in the industry would tell us the story of the most successful sale he ever made, or, perhaps, the most difficult sale he ever lost, we would have the finest sales manual in the world.

For we would have a record of actual experience. We would have the situation, not as a writer might imagine it, but as a business man saw it and overcame it—or was overcome by it. Selling needs a certain amount of resourcefulness. That resourcefulness comes from having a good background of sales experience. In this new department we shall offer the experience of many men in our industry, facing the same problems of selling day after day that every one of our readers faces.

Thus, in time, every possible sales situation should be covered, in an intensely practical way.

A. S. BLUNK HEATING COMPANY
ENGINEERS AND CONTRACTORS
428 SOUTH THIRD STREET
LOUISVILLE, KENTUCKY
CITY 5000

WHILE YOUR HEATING PLANT IS YET IN OPERATION IS THE TIME TO DETECT THE WEAK POINTS THAT MAY CAUSE YOU TROUBLE.

Thru our HEATING SERVICE, an experienced heating engineer checks over your heating system twice yearly. It is the safe-guard that you need to detect these weak points in time. It costs so very little that we are sure you want to take advantage of it NOW before the heating season is over.

If there is any part of this service that is not clear to you, let us tell you, and also give you the names of friends or acquaintances who are using it.

Perhaps you have misplaced the enrollment card which we sent you recently. Just call City 5000 today and another will be mailed to you.

Faithfully yours,

BMB-OS A. S. BLUNK HEATING COMPANY

B. M. Blunk

P. S. This protection costs only $1.50 yearly for Residences--larger systems and calls beyond City Limits at a slightly higher rate.

A letter that helped put over the inspection idea

Introducing *The* Master Salesman

who gives you here an actual sales situation as it occurred, shows how the contractor met it, and analyzes the reason for the success of the contractor's tactics

SHORTLY after a plumbing contractor had invested a considerable sum of money in a very complete display room, a lady entered the store and said she had come in to inquire about some plumbing she wanted installed in her home. She wanted a cheap bathroom for a maid's use.

"You see," she began, "I have just purchased a home and it is perfectly ideal in every way but for some unexplainable reason the room on the top floor adjoining the maid's room was never finished with bathroom fixtures; and of course you know I must have proper conveniences for my help. So, I thought I'd stop in and see whether or not you have a set that I could have installed without much expense. It isn't a new house and I don't think I want to spend much money on this room. I thought you might have some that had been used but were in good condition. It's only a maid's room, you know."

All this time her eye turned frequently to the fixtures before her. The contractor appeared to ponder a moment over what she had told him, then he said: "Don't you think that lavatory is very attractive Mrs. Brown? It is one of the new color ideas in bath fixtures, that have lately become so popular." And he launched into a sales talk on the beauty and attractiveness of a carefully selected scheme in colors for bathrooms.

"But," she interrupted, "I don't want anything like that, it is altogether too expensive. You must remember this is for my maid's use."

"Yes, I know that, Mrs. Brown," he replied. "But I noticed you looking at it while you were talking and, in fact I like it myself, so I couldn't help asking your opinion. Notice that tub, too; how perfectly it combines with the lavatory. I think, too, the trimmings are as important in the effectiveness of the outfit as the fixtures themselves; don't you?" He kept

talking away, about the beauty and effectiveness of the most expensive fixtures in his place.

She repeatedly endeavored to turn him away from the subject and discuss second-hand materials, but he persistently but skillfully kept her mind on the bathroom before her. Finally she became a little impatient and explained once more that what she wanted was a cheap set of fixtures for the maid's room.

Then Mr. Salesman got in his good work. "Mrs. Brown," he said, "I haven't been just wasting your time, while we were talking here. I've listened attentively to every thing you've said and not once lost sight of what you want. I've been trying to get in my mind a picture of your home, what I think would appeal most to you and what to offer to make you most satisfied. Frankly, I don't recommend that you waste your money buying something someone else has cast off. I wouldn't want it and I know you don't; and wouldn't be satisfied if I gave you what you asked for.

"Now you like this bathroom, here, and I'm sure I don't blame you, for it is a beauty. It's a new combination of fixtures that I have not used in any other home, nor do I know of any place where a set like it is set up in just this way. The style, combination and effects are quite original. On the other hand, your home is not a new one, and doubtless the fixtures are of obsolete pattern that is long since out of date.

"You want second-hand fixtures; you have them right in your own bathroom and what is better, you know all about them. That means a lot from a sanitary viewpoint. We'll take those fixtures and set them up in the maid's room. No doubt to her, they will be the most wonderful she ever had for her use. That will please her. And good maids must be kept pleased and happy too, you know.

"Then I'll set this outfit up for your bathroom and when it is finished you will have the pride and enjoyment in something every one likes their guests to see; a nice modern and tastily arranged bathroom."

"How much will that bath room cost me?" asked Mrs. Brown.

"Why," he replied, "if you consider the value of the two bathrooms put in the way I have suggested, as against leaving your bathroom as it is and putting second-hand fixtures in the maid's room, it will be a very cheap job and your house will be worth more money too. Of course, I'll have to see what the layout of the plumbing is to tell you accurately, but I should say around a thousand. If you bought and put in second-hand material it would cost you $600 and you'd have an old style bath for your family use and somebody else's junk in the maid's room. This way, you're really buying a fine bathroom for $400.00."

In this case the prospect lost sight of her own comfort and satisfaction in the consideration of one factor only. It was only the maid's apartment and she wanted to spend as little money as possible. It is a human equation to be susceptible to satisfying one's own desires, while with others the measure of the cost becomes a paramount factor. The contractor in this case appealed to what the customer wanted for herself, by painting a picture, that after she spent her money on the basis of her first thought, her own bathroom would not look much better that that of the maid. Through her pride in her home he sold her what was profitable to him and a satisfaction to her. By holding back the point of his remarks about the new fixtures, his idea came to her in the nature of a surprise.

If

you have ever made *a difficult sale*
you have ever lost *a difficult sale*
you are faced now *with a difficult sales situation*

Write The Master Salesman!

You may have made a successful sale which was particularly difficult. Tell the story of it briefly to "The Master Salesman," so that he may include it in his department and point out why it was successful. It will help others.

You may have lost a difficult sale. Perhaps you do not know why you lost it. Perhaps you have wondered what you might have done in order to secure the order. Send the story to "The Master Salesman," in detail, and he will tell you why you lost the sale and how you might have saved it.

You may be faced with a difficult sales situation right now. Write the details to "The Master Salesman" and he will advise you what course to pursue in order to make the sale.

He will welcome any letters reciting your sales experiences.

The Effect of House Construction *on* Heating Plant Requirements

By ARA MARCUS DANIELS

Article No. 3.

Total Heat Requirements

"To make a comparison for the total heat losses for the three types of construction, all values from Table 3 to 8 inclusive, as calculated, have been brought together in Table 9.

"The following total heat losses are there shown:

Type A—140,630 B.t.u. per hour.
Type B— 93,124 B.t.u. per hour.
Type C— 62,650 B.t.u. per hour.

"Thus, Type B loss is 47,506 B.t.u. less than Type A, while Type C is 77,980 B.t.u. less than Type A,

Table 9—Total heat requirements

Items		Building Construction		
		Type A	Type B	Type C
1		2	3	4
Walls	Table 3	37,450	26,375	15,876
Windows and Doors	4	31,405	31,405	31,405
Attic Floor	5	10,660	4,978	2,706
Roof	6	14,640	8,325	5,080
Window-Door Infiltration	7	42,830	20,230	7,260
Wall Infiltration	8	3,645	1,811	323
Total B.t.u. Loss per Hour		140,630	93,124	62,650
Reduction in Loss over Type A		.....	47,506	77,980
Per Cent Reduction		.....	33.8%	55.5%
Per Cent Heat Required		100%	66.2%	44.5%

or in terms of per cent, Type B construction as compared to Type A construction reduces heat loss by 33.8 per cent; Type C construction as compared to Type A construction, reduces heat loss by 55.5 per cent.

"Or, in terms of heat requirements, with Type B construction only 66.2 per cent as much heat will be required as with Type A for the maintenance of an inside temperature of 70 degrees Fahr. when it is zero degree Fahr. outdoors. With Type C construction, only 44.5 per cent of the heat for Type A construction will be required.

"Thus, you may see plainly that type of construction has a very marked effect on heat requirements, and as heat requirements control the design and operating characteristics of the heating plant, it is in the interest of every heating contractor to inform himself as thoroughly as possible. Thereby, he may put himself in a proper and safe position to discuss and advise with his customer on this important phase of the heating problem."

Effect on Radiation Requirements

"Have you enough, or shall I go on," asked Mr. Sales Engineer, as he began to collect his papers.

"Don't stop, you're just getting to the part that is going to tell me how much of a heating plant I'd have to put in each of those houses. Go on," said Mr. Heating Contractor.

"Well, our next step is to determine radiation requirements for each of the rooms for hot water heating systems in the case of each type of construction. To do this, we must have the total heat loss per hour for each room for each type of construction. Here, on these sheets, as Table 10 for Type A house, Table 11 for Type B house and Table 12 for Type C house, I have tabulated all these quantities. The area of radiation required for each is now found by dividing the total B.t.u. loss per hour for each room by 150 and by so doing we get the values for radiation as given on the last line of Tables 10, 11 and 12, respectively."

"But, wait a minute," interrupted Mr. Heating Contractor, "where do you use the figure 150 to divide by and what does it mean?"

"That's easy, but we'll have to dig just a little

Table 10—Type A Construction—Heat Requirements—B.t.u. per Hour

Losses	First Floor					Second Floor					
	Living	Library	Dining	Kitchen	Hall	Bed R. A	Bed R. B	Bed R. C	Bed R. D	Bath	Hall
1	2	3	4	5	6	7	8	9	10	11	12
Walls Table 3	4600	1520	4650	3580	5940	3420	1130	3940	3290	2960	2420
Windows and Doors Talbe 4	4450	1670	5150	2120	2405	3710	1490	4290	2550	2280	1390
Attic Foor Table 5	.....	.....	.....	.....	.....	1980	1790	2340	1580	1200	1770
Roof Table 6	.....	.....	.....	.....	.....	2720	2450	3220	2170	1650	2430
Window and Door Infiltration Table 7	4650	4650	12100	.....	.....	3640	3640	10900	.....	3250	.....
Infiltration Through Walls Table 8	550	570	570	300	.....	335	335 150	335 300	.....	200	.....
B.t.u. Loss per hour—Total	14250	8410	22470	6000	8345	15805	10885	25325	9590	11540	8010
Hot Water Radiation—Sq. ft	95	56	149	40	56	105	125	170	64	77	53

to get it. If a radiator is assumed to be filled with steam at a pressure of 2 lb. per square inch and to stand in still air, the temperature of which is 70 degrees Fahr., the range of temperature between the heating medium (steam) and the air will be 220 degrees Fahr. (steam temperature) minus 70 degrees Fahr. (air temperature) = 150 degrees Fahr. Thus, we have a temperature difference of 150 degrees Fahr. which is considered as the standard temperature range. Keep that in mind.

"Now, different experimenters have conducted laboratory tests to determine just how much heat, expressed in heat units, B.t.u. (British thermal units) will be given off during one hour from a square foot of radiator surface when the standard temperature range exists for a degree difference in temperature between the temperature of the radiator and of the air surrounding it. And the figure or value thus determined is called the coefficient of heat transmission of the radiator. The value of this coefficient for standard column type radiators varies between 1.50 and 2.00. I shall take 1.65 now for purposes of illustration, to explain its use.

"If a radiator will emit per square foot of surface per degree temperature difference per hour, 1.65 B.t.u., then with steam at a temperature of 220 degrees Fahr. (219.4 degrees Fahr. actual at 2 lb. per square inch) and the surrounding air at 70 degrees Fahr., the temperature range will be 150 degrees Fahr. and each square foot of surface of this radiator will emit, in one hour, 233 B.t.u. obtained as follows:

1.65 (factor) x 150 (temperature difference) = 233 B.t.u.

"Remember now, that so far, I have been talking about standard temperature range conditions. If the temperature difference between the heating medium and the surrounding air be increased or decreased, the rate at which heat is emitted will increase or decrease in like manner. This increase or decrease will vary at the rate of very nearly 0.2 per cent per degree above or below the standard range of 150 degrees Fahr. and is applied in this proportion to the radiator heat emission coefficient, as I will explain.

"We will assume, for these jobs, that the heating medium, the hot water, enters the radiator at 180 degrees Fahr. and leaves it at 160 degrees Fahr. The average temperature in the radiator will then be 170 degrees Fahr. If the room temperature is 70 degrees Fahr., then the temperature range will be 170 degrees Fahr. (temperature of heating medium in the radiator) minus 70 degrees Fahr. (room temperature) equals 100 degrees Fahr. Note that this is 50 degrees Fahr. below standard range.

"The radiator factor 1.65 must therefore be reduced by 0.2 per cent for each of these 50 degrees Fahr. below standard and we will have 1.65 minus [0.002 (variation factor) x 50 (degrees below standard) x 1.65] = 1.485 B.t.u. Then each square foot of radiating surface will emit 1.485 x 100 (temperature

Table 11—Type B Construction—Heat Requirements—B.t.u. per Hour

Losses	First Floor					Second Floor					
	Living	Library	Dining	Kitchen	Hall	Bed R. A	Bed R. B	Bed R. C	Bed R. D	Bath	Hall
1	2	3	4	5	6	7	8	9	10	11	12
Walls....Table 3	3240	1070	3270	2530	4170	2410	795	2780	2325	2085	1700
Windows and Doors....Table 4	4450	1670	5150	2120	2405	3710	1390	4290	2550	2280	1390
Attic Floor....Table 5	.....	.....	.....	.....	.....	925	835	1090	738	560	830
Roof....Table 6	.....	.....	.....	.....	.....	1550	1400	1830	1230	935	1380
Window and Door Infiltration....Table 7	2200	2200	5680	.....	.....	1720	1720	5180	.....	1530	.....
Infiltration Through Walls....Table 8	270	285	285	150	.....	168	167 68	168 150	.....	100	218
B.t.u. Loss per Hour—Total	10160	5225	14385	4800	6575	10483	6375	15488	6843	7490	5518
Hot Water Radiation—Sq. ft	67	35	95	32	44	70	42	103	46	50	37

Table 12—Type C Construction—Heat Requirements—B.t.u. per Hour

Losses	First Floor					Second Floor					
	Living	Library	Dining	Kitchen	Hall	Bed R. A	Bed R. B	Bed R. C	Bed R. D	Bath	Hall
1	2	3	4	5	6	7	8	9	10	11	12
Walls....Table 3	1960	650	1990	1525	2508	1460	400	1685	1408	1260	1030
Windows and Doors....Table 4	4450	1670	5150	2120	2405	3710	1390	4290	2550	2280	1390
Attic Floor....Table 5	.....	.....	.....	.....	.....	502	455	594	400	305	450
Roof....Table 6	.....	.....	.....	.....	.....	945	850	1120	750	570	845
Window and Door Infiltration....Table 7	705	705	2100	.....	.....	640	640	1900	.....	570	.....
Infiltration Through Walls....Table 8	51	51	51	34	.....	34	25 11	26 25	.....	17	.....
Total B.t.u. Loss	7166	3076	9291	3679	4913	7291	3771	9640	5108	5002	3715
Hot Water Radiation—Sq. ft	48	22	62	24	33	49	25	64	34	33	25

range) = 148.5 B.t.u. per hour which for practical reasons is taken as 150, and there you have the factor you asked about."

"Thank you, that's something that's had me puzzled for a long time. Until now, I have never known just what that 150 really meant. Go on."

"All right, we'll go back to these Tables 10, 11 and 12. By dividing the total B.t.u. loss per hour for any room by 150, we get the square feet of hot water radiation required. Thus, for the living room, 14250 (B.t.u.) ÷ 150 = 95 square feet as noted on the last line of Table 10. All the others for the three types of construction are obtained similarly.

"Now in order that we may more easily total these, select radiator sizes and compare the requirements for the three types of construction, I have retabulated these values in Table 13, columns 1, 2 and 3. So you see, by the last line of these columns, that if Type A construction is employed we should install approximately 937 square feet of hot water radiation; better construction, as Type B construction, will permit a reduction of 34 per cent in radiating surface, requiring only 621 square feet, while with a still better type of construction as Type C, a further reduction of 202 square feet of radiating surface may be made. Thus, between Type A and Type C construction, it is apparent that the better type will permit a reduction of 518 square feet of radiating surface or over 55 per cent.

Table 13—Radiation Requirements

Rooms	Radiation Calculated			Radiation Selected (all 5-col. 26-in.)								
	Type of Construction			Type of Construction								
	A	B	C	A			B			C		
	Sq. ft.	Sq. ft.	Sq. ft.	No. Sect.	Length In.	Sq. ft.	No. Sect.	Length In.	Sq. ft.	No. Sect.	Length In.	Sq. ft.
	1	2	3	4	5	6	7	8	9	10	11	12
Living	95	67	48	27	67½	94½	19	47½	66½	14	35	49
Library	56	35	22	16	40	56	10	25	35	7	17½	24½
Dining	149	95	62	28	70	98	17	42½	59½	12	30	42
				14	35	49	10	25	35	6	15	21
Kitchen	40	32	24	11	27½	38½	9	22½	31½	7	17½	24½
Hall	56	44	33	16	40	56	13	32½	45½	9	22½	31½
Bed R. A	105	70	49	30	75	105	20	50	70	14	35	49
B	72	42	25	21	52½	73½	12	30	42	7	17½	24½
C	170	103	64	30	75	105	20	50	70	12	30	42
				19	47½	66½	10	25	35	6	15	21
D	64	46	34	18	45	63	13	32½	45½	10	25	35
Bath	77	50	33	22	55	77	14	35	49	10	25	35
Hall	53	37	25	15	37½	52½	10	25	35	7	17½	24½
Totals	937	621	419	.....	.....	934½	.....	.....	619½	.....	.....	423½

"In columns 4, 5, 7, 8, 10 and 11, I have listed the number of sections and length of each for the nearest actual surface to that calculated as required, taking in all cases radiators of 5 column and 26 inches in height.

"In order to visualize this difference in radiation, here, as Fig. 12, I have shown the radiators graphically, for each room and for each type of construction.

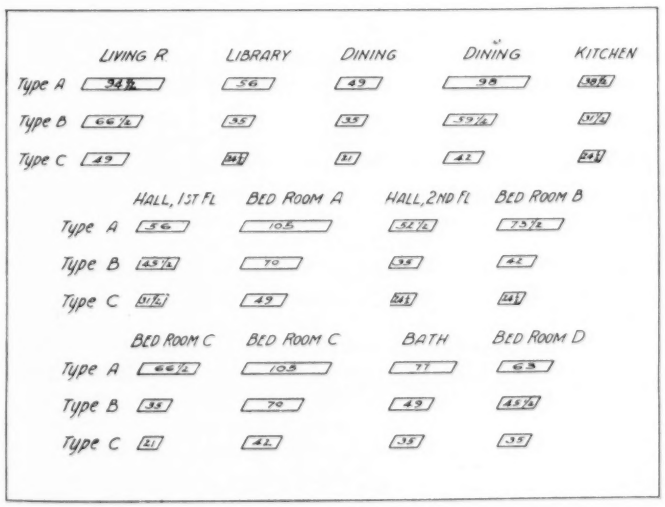


Fig. 12.—Graphic comparison of radiation requirements for Type A, B and C construction

Comparing Piping Requirements

"I am sure you appreciate that should you be called upon to figure on a job for each of these types of construction that you would prepare piping designs of different capacities. In order to make a true comparison on the basis of the three types of construction, I have prepared three layouts, see these Figs. 13, 14 and 15, using for each a reversed return piping design. You will note that each layout is similar as to the direction and location of the pipe runs, but that the sizes differ in order to be suited to the radiation supplied."

"By the way," interrupted Mr. Heating Contractor, "can you give me a table for determining pipe sizes for such work as this. I mean one which, from experience, you have found to practically assure excellent service."

"Sure," responded Mr. Sales Engineer, "by

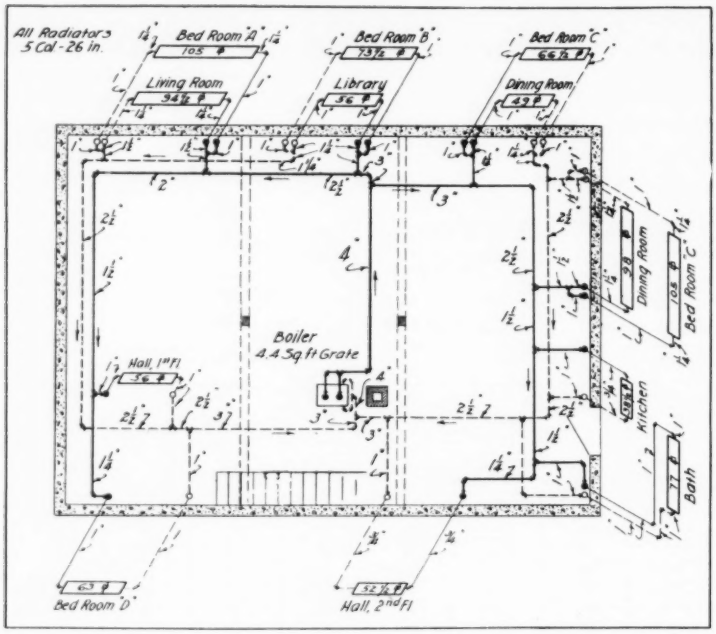


Fig. 13.—Piping design for Type A construction

this Table 14 you should have little difficulty in establishing pipe sizes. Let me caution you, however, on a few points in connection with hot water piping design.

First: Use a reversed-return piping system in preference to a straight-run system. (Now don't ask me to go into a discussion of the relative merits of these two types of systems. I'll promise you, however, that some other day I'll explain these thoroughly.)

Second: Do not use any main smaller than 1¼ inch even though the last radiator has only a ¾-inch connection. Run the 1¼-inch to the base of the stub and use a proper size reducing ell.

Third: Be sure that grades are uniform and liberal, never less than ¾ inch in 10 ft. and up to 1½ inch in 10 ft. when you can get it.

Fourth: Remember that any size pipe, used as a riser will carry much more water than the same size as a main and therefore select sizes accordingly.

Fifth: Always check back on the area of the mains at all points and be sure that the area of a main at any point is greater than the total area of all valves supplied by the main at that point. This Table 15 is handy in case you do not have one.

"Referring to these Figs. 13, 14 and 15, you will observe that the following sizes of main supply pipes are required:

For Type A, a 4-inch pipe.
For Type B, a 3½-inch pipe.
For Type C, a 3-inch pipe.

"The branch leads compare as follows:

For Type A, a 3-inch and a 2½-in. pipe.
For Type B, two 2½-in. pipes.
For Type C, a 2½-in. and a 2-in. pipe.

"And so you can compare all parts of the piping of these three systems and if you are real ambitious some night, you might sit down, take off all quantities, and prepare for yourself a comparison of the cost for supplying all equipment in place. I have these figures under cover here, but I'm not giving them out. You can do that for yourself."

Comparing Boiler Sizes

"On each of these sheets, Figs. 13, 14 and 15, I have noted the boiler requirements as to grate area. Since we are making a comparison of the heat requirements for each of these types of construction and since we do not always have (in fact seldom) a set of boiler curves (see article on Boiler Efficiency by the author in DOMESTIC ENGINEERING of November 10, 1928) which would enable us to make the most intelligent selection, I have used grate area as the basis. It is not best to use catalog boiler ratings as pointed out in the article above referred to. Would you like me to run through the calculations for the boilers to show you how they are obtained?"

"Yes, indeed, go ahead," said the heating contractor.

"All right, here goes. The total heat loss, or rather, heat to be supplied by the boiler must include, in addition to that calculated as required to be supplied from the radiators, the heat given off from the piping system and boiler.

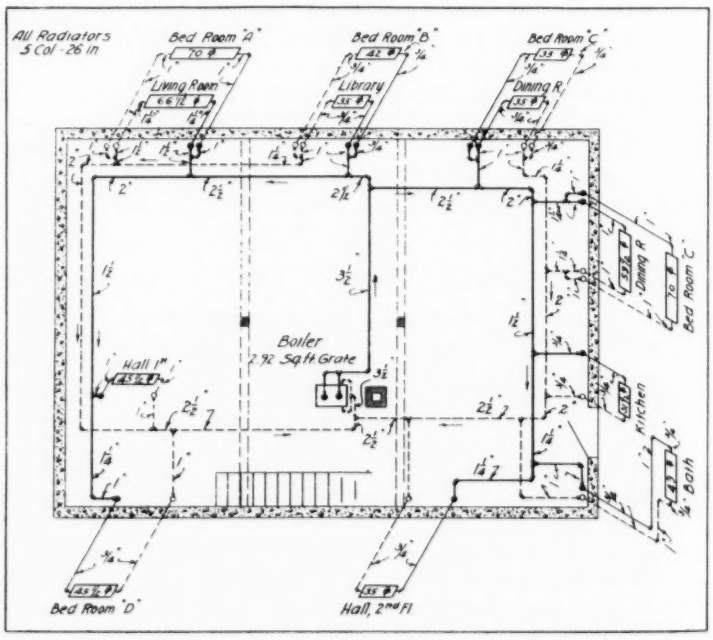


Fig. 14.—Piping design for Type B construction

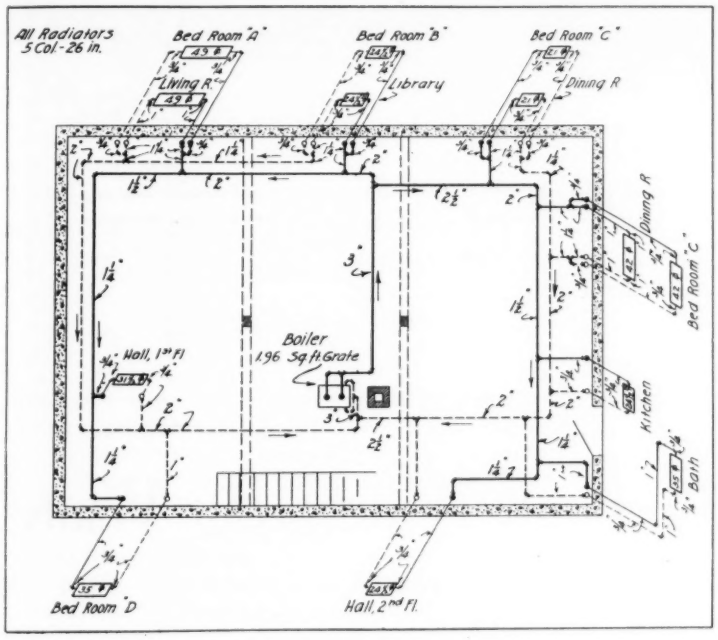


Fig. 15.—Piping design for Type C construction

"Referring to Table 9, we find the total B.t.u. loss per hour to be:

For Type A—140,630 B.t.u. per hour.
For Type B— 93,124 B.t.u. per hour.
For Type C—62,650 B.t.u. per hour.

"If we assume that the area of piping, risers and boiler from which heat is given off is 35 per cent of that of the standing radiation, then the total boiler heat requirements will be, approximately:

For Type A—140,630 x 1.35 = 190,000 B.t.u. per hour.
For Type B— 93,124 x 1.35 = 126,000 B.t.u. per hour.
For Type C— 62,650 x 1.35 = 84,500 B.t.u. per hour.

"We must next assume a rate of combustion suited to the operating conditions. To assist in this, here is Table 16, from which we will decide to figure on a maximum rate of combustion of 6 pounds per square foot of grate per hour for each of the boilers.

"We will assume that the fuel to be burned contains 12,000 B.t.u. per pound and that our plant, when burning 6 pounds of fuel per hour will operate at a combined efficiency of boiler and grate of 60 per cent.

"Now we will multiply the rate of combustion by the heat value of the fuel and this product by the assumed efficiency. Thus, we will obtain the number of B.t.u. transferred per hour from the boiler to the water in the system. For the three

(Continued on Page 101)

Enforcing Small-Town Plumbing Regulations

Some difficulties encountered in smaller communities in making codes effective

THOSE of us who have carried on a plumbing business for years in a sizeable city, where the plumbing laws are rigidly enforced without favoritism, may not realize what the plumbing contractor has to meet who is struggling along under far less favorable conditions.

The small town often presents a peculiarly difficult situation for the plumber who is ambitious to do high grade work, and who is honest enough to be fair and square with his customers. More than ever before, the small town in many sections is fast coming to a point where its plumbing is as good as that in the city. There remain some small towns, however, located in sections of the country where the desire for good plumbing has not been fully developed, and where the honest plumber, well educated in the modern practice of his trade, and anxious to demonstrate his ability, has a hard time of it. Such a man recently wrote us, as follows:

"I would appreciate it very much if you would give me your best advice on the following:

"About three years ago our little town installed a sewer. After installing the sewer, our city board passed an ordinance showing how plumbing should be done. We were all well pleased with this. They gave us an inspector also, and we all did our best to live up to the law.

"About two years later, the city board passed a law compelling the plumbers who work in this town to obtain a license card from an examining board. As we were too small to have an examining board, we went before the board of a neighboring city. Some of us got by and some didn't. There were only two masters who could pass the examination. We had to pay the license fee and give a bond to do work in the town.

"In April of this year a lumber yard man was put on the city board, and from that time the law has not been enforced. Now they permit anyone to do plumbing that wants to, without a license and without a bond. The plumbing inspector has been taken off, and any kind of work is allowed.

"This lumber man is selling material and letting out the labor on jobs to the lowest man.

"I would appreciate your best advice on this matter."

If what our correspondent says is true, and we have no reason to doubt his word, the plumbing business in

(Continued on Page 108)

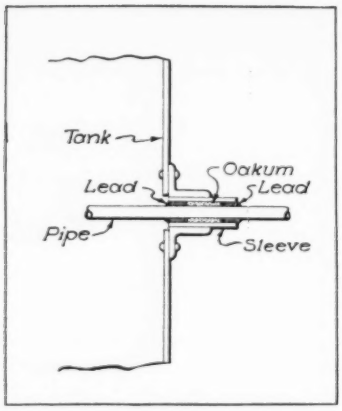


Fig. 1

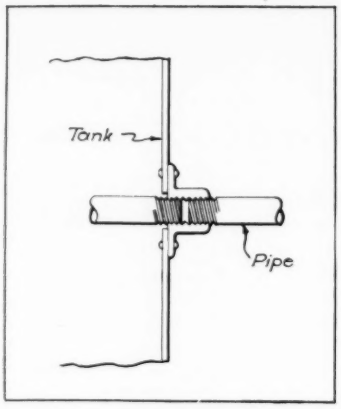


Fig. 2

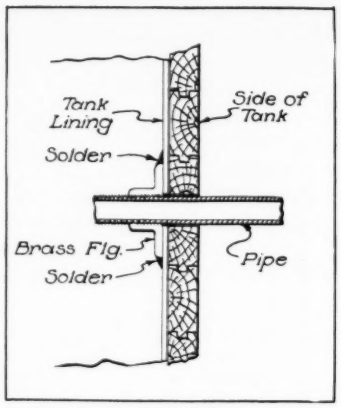


Fig. 3

Carrying Pipes Through Waterproof Walls

By HAROLD L. ALT

THERE are several methods of running pipes through walls but most of them do not contemplate a watertight joint. Such joints are necessary where outside ground water is liable to rise above the point where the pipe leaves the building and in such places where pipes enter into or connect with concrete storage tanks. There are also wooden tanks, lined and unlined, and steel tanks.

Of course with steel tanks a flange may always be caulked to the side or bottom of the tank and the pipe screwed into the flange. If it is desired to carry the pipe through the tank construction to some point in the interior of the tank then a short sleeve may be screwed into the flange and the line run through sleeve, after which the space between the pipe and the sleeve can be filled with oakum and caulked up with lead. This is illustrated in Fig. 1.

Another method is to use a double flange, one on each side of the steel plate, or to use a special flange with an especially long pipe thread so as to allow the pipe outside of the tank to be screwed into one end of the pipe thread and the pipe inside of the tank to be screwed into the other end of the same thread as indicated in Fig. 2.

With wooden tanks, the chief essential is to provide a flange well screwed up to the pipe thread inside of the tank with a gasket under the flange and a locknut on the outside of the tank to draw the inside flange tight down onto the gasket. If a lining is used inside of the tank it usually will be either copper or zinc and in this case the gasket may be eliminated and a brass flange substituted. This brass flange can be soldered to the tank lining all around its edge so as to make a permanent watertight connection as shown in Fig. 3.

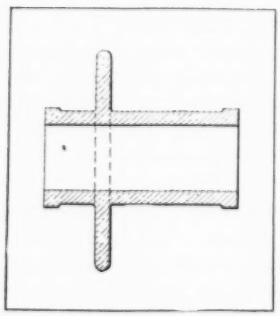


Fig. 4

With concrete, the proposition is much more difficult as a crack usually develops in time around any sleeve cast in concrete owing to the concrete drying out and pulling away from the steel or iron sleeve. Where it is necessary to pass through concrete a sleeve of the type shown in Fig. 4 is often employed.

The principal factor entering into this type of sleeve is the extended flange which runs out into the concrete all around the outside of the sleeve. Any water tending to follow the outside of the sleeve will have to pass out around the end of this flange and back again to the outside of the sleeve before it can come through the wall.

When concrete walls are waterproofed with a membrane, such as where pitch and tar paper are used, there generally is a protective surface of concrete put on top of the water proofing, this surface being 3 inches to 4 inches in thickness. When this construction is used the extended flange should be so arranged as to come on the surface to be waterproofed and in such a way that the waterproofing can be brought up to and attached to the flange with a hot pitch joint the same as it is attached to the concrete and as given in Fig. 5. These sleeves are made large enough to permit the pipe passing through the sleeve and with some slight space for adjustment—say ¼-inch to ½-inch all around the pipe. Oakum is then caulked into this space, hot lead is run in on both sides and the joint caulked tight.

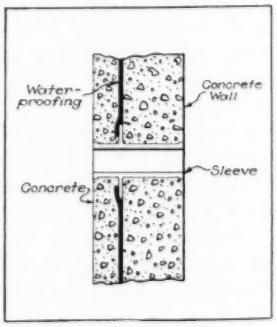


Fig. 5

Interpreting *a* Plumbing Code

Portland, Oregon, has worked out an unusual method to be used in interpreting provisions of local ordinance

By R. M. STARBUCK, Jr.

WHILE a large and increasing number of our states, cities and towns are making use of the pilot drawing as a practical aid in the interpretation of their plumbing codes, Portland, Oregon, is making very satisfactory use of quite a different method.

William Hey, chief plumbing inspector of Portland, is one who at all times is sufficiently interested in the dissemination of knowledge helpful to the plumbing trade, to sit down and put his thoughts on paper, and this thing he did for us some months ago, relative to the interpretation of the Portland plumbing code. We wish to express our gratitude for his kindness in this instance and in previous instances.

Mr. Hey writes in part, as follows:

"We have had, for a number of years, charts showing the interpretation of different sections of our code.

"We have two charts 22 inches x 28 inches, illustrating forty sections of the code. The chart is ruled, page size, so that the same may be cut up and inserted in the

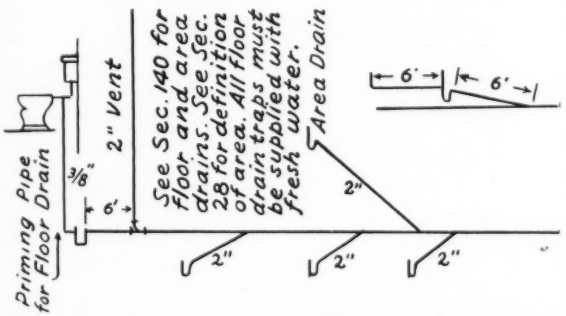


Fig. 2.—Floor drain must be vented if over 6 ft. from a vented line

code book, under the section illustrated. We use a loose leaf book which permits the insertion of these charts. These two charts are sold to the plumbers.

"We had to make these drawings to get uniform inspection, as some inspectors would pass work that another would turn down. These charts were made primarily for office use. We had so many calls for them that now I believe every shop in the city has copies, as the city sells them at cost."

The Portland scheme may be made clearer by reference to Fig. 1. Each of the two sheets is divided into 21 equal sections, each approximately 3¾ inches x 6¾ inches, which is the same size as the Portland code, which is a loose-leaf affair.

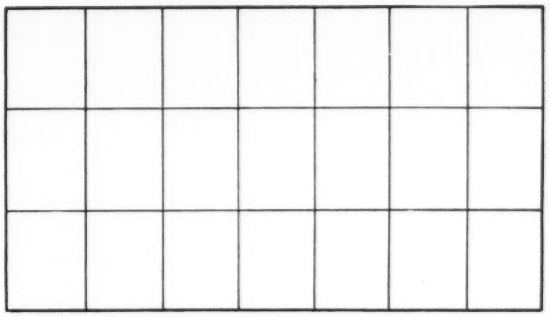


Fig. 1

Drawings Interpret Items in Code

Each of the sections on the two sheets contains a drawing, the purpose of which is to interpret or make clear, one of the important sections of the code.

Each person obtaining the two large sheets is supposed to cut them up and insert them in the code next to the code section that they refer to.

Mr. Hey writes further concerning his plan of interpretation, from which it will appear that he feels the method to be a very satisfactory one. He writes as follows:

"We believe that a picture is easier to read, and will help many persons to grasp the meaning of the code sections more readily. The wording of almost any code can be construed to mean something entirely different from the intent. Some one in authority must interpret the code, and we have had to make rulings on the different sections for the guidance of the plumbers, but in time, these rulings would cover more reading matter than the code, so we made these charts and have made the drawings to cover the different sections, as we believe this method to be far superior to the drawing of the whole code. The plumber would not have to study the whole chart to find out what he wanted to know, but could turn to the particular section where the drawing would interpret that section at a glance.

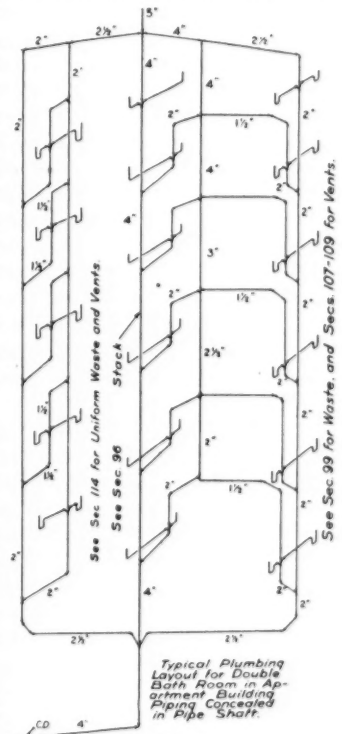

See Sec 110 for Uniform Waste and Vents
See Sec 96
Stack
See Sec 99 for Waste and Secs 107-109 for Vents
Typical Plumbing Layout for Double Bath Room in Apartment Building Piping Concealed in Pipe Shaft
CO

Fig. 3

"We have not made drawings of all the sections, but, as stated in my former letter to you, the drawings were made for the office, and have proved such a success in getting away from a lot of grief that, in time, we will cover all sections, and have the same printed in the

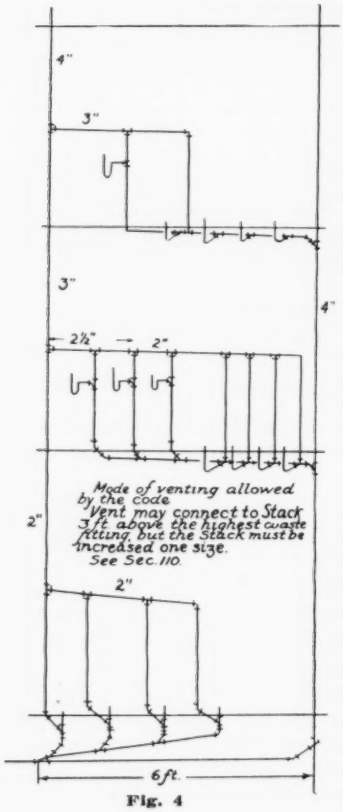

4"
3"
3"
4"
2½"
2"
Mode of venting allowed by the code. Vent may connect to Stack 3 ft. above the highest waste fitting, but the Stack must be increased one size. See Sec. 110.
2"
2"
6 ft.

Fig. 4

code in the future."

In the illustrations accompanying this article, we will show some of the Portland drawings interpreting various sections of the code.

Example of Drains Covered in Code and Illustration

Our Fig. 2, for instance, shows the drawing which interprets section 140, which reads in part as follows:

"All floor and all area drains, excepting stable floor drains, shall be trapped, shall be connected to the main or branch drain and, except where such drains are used in the basement or cellar, or located within six feet of the main or branch house drain, shall be vented as provided in section 107. "Area drains shall not be allowed over fifteen feet from the running line, without venting, where the trap is situated outside of the building. Every trap serving a floor or area drain shall be supplied with fresh water through a galvanized iron pipe, in diameter not less than three-eighths inch, or through a brass pipe in diameter not less than seven-sixteenths inch, connected to the nearest flush pipe and discharging on the house side of the trap."

In our opinion the interpretative drawing of section 140 (Fig. 2) makes the intent of the section very clear. We do not recall other plumbing codes that call for such a water connection for a floor drain. We do know of some codes, however, which call for the drain to be water supplied, but do not show how this is to be done. In our opinion, very few cities enforce a requirement of this kind. Here is what Mr. Hey has to say on the subject, in a letter written to us some time ago:

"The recommendation of the Hoover code on floor drains (page 129) does not go far enough, in that no provision is made to keep this trap sealed. A floor drain is usually installed in the basement, in some out-of-the-way place, and may be there for years without any attention. Few of the codes require this trap to be supplied with water to keep it sealed. Some codes go into great length in regard to venting the floor drain, (another waste) which is generally impossible, except by a long horizontal vent pipe under the floor, and which is practically useless. The vent without a water supply to the trap, in our opinion, is worse than no vent, as it is bound to increase evaporation. We believe this trap should be supplied with water, and this supply automatic. We require a primer from the toilet."

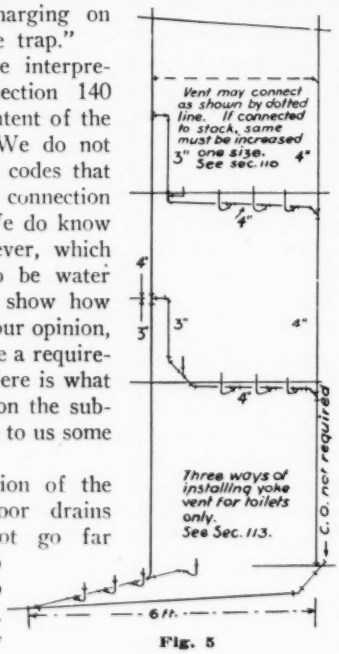

Vent may connect as shown by dotted line. If connected to stack, same must be increased 3" one size. See sec. 110
4"
4"
4"
3"
3"
4"
4"
Three ways of installing yoke vent for toilets only. See Sec. 113.
C.O. not required
6 ft.

Fig. 5

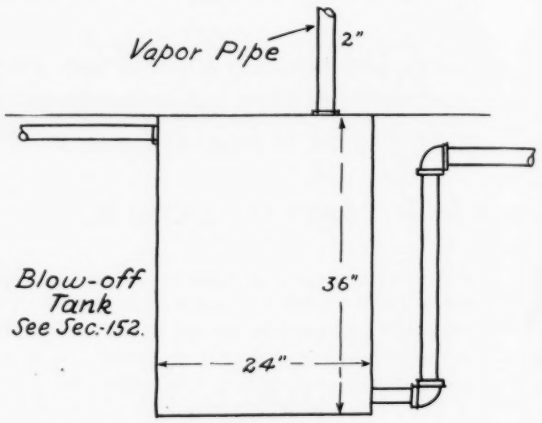


Fig. 6

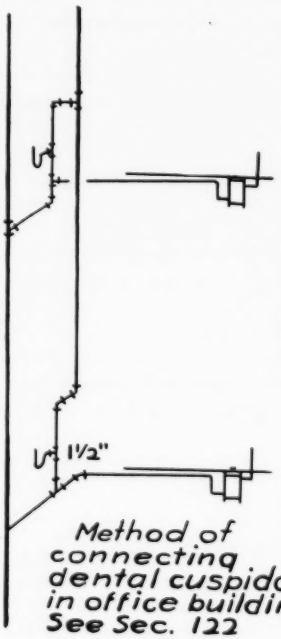


Fig. 7

We agree with the foregoing remarks on floor drains, both as to the priming of them and venting also. Venting is done principally to prevent siphonage, and in our opinion this danger in connection with most floor drains is negligible.

Desirability of Cleanouts Questioned

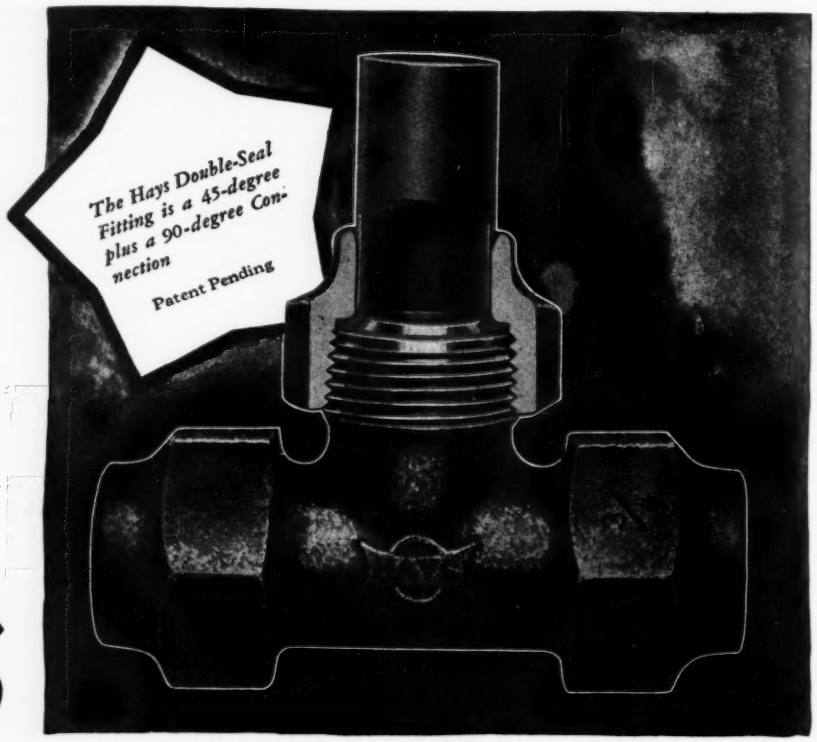
We feel that the day is gone for the cluttering up of the plumbing system with unnecessary things, and the floor drain is one of these things, and should be installed only where there is real need of it.

Our correspondent also took a shot at cleanouts as specified in the Hoover code, as follows:

"We find that the Hoover code recommends (Sec. 63) cleanouts at the base of all soil and waste lines. We have found this to be an additional expense without any material benefit, but in reality a detriment, as we have found that cleanouts are opened by every Tom, Dick and Harry that has a wrench, and the covers either broken

Willie, Willie, go easy, I'm no
Vibration proof Hays Connection

★ *Exclusive with Hays—this double-seal provides double strength, safety and ease of installation. The 45-degree seat of the fitting holds the pipe in a wedge, making a seal that is absolutely tight. The 90-degree seat is the shock absorber. It {1} locks the pipe, {2} provides a second seal of positive tightness and {3} protects the 45-degree seal by absorbing all pulling strains and vibrations.*



HAYS *IS VIBRATION*PROOF

THE HAYS Double-Seal Connection is proof against vibration because it is equipped with a shock-absorber in the form of a 90-degree contact between the pipe and the connection. Hays is not willing to depend upon just one point of contact, for it requires *two* to provide the tightness and the strength needed to make a plumbing installation permanently leakproof. All pulling strains and other stresses are thus prevented from affecting to any extent the positive seal of the 45-degree seat.

The widespread success of the Hays Copper Plumbing Method is due to this connection {patent applied for}. Threading is not necessary to make joints, so that lighter and therefore less expensive pipe is used. No other plumbing material can boast of the advantages of permanence, serviceability and economy that are obtained by copper with this Method.

Every Hays installation means profit to you—before you begin the job, there is a profit in the material itself. Hays jobs bring more jobs. It is the kind of lasting and satisfactory plumbing most people have always wanted, and here it is at a price all can afford to pay.

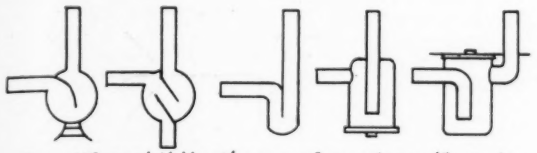
Write for details of the Hays Copper Plumbing Method. We will prove what we say about cost and profit . . . and about home owners wanting this kind of good plumbing.

HAYS MANUFACTURING COMPANY · ERIE, PA.

HAYS DOUBLE SEAL CONNECTION

or lost, leaving an open sewer, for sewer air to enter the building."

This remark provides some food for thought. We have heard the same accusation made before. At the same time, a cleanout at the foot of a stack is an awfully



Sec. 119 prohibits the use of any trap that depends upon internal partitions or upon any mechanism to maintain its seal. The above are a few of the traps not allowed.

Fig. 8

handy thing in time of need. This is a question for debate. What have our readers got to say about it?

Before considering further the Portland interpretative drawings, we will give you further remarks that Mr. Hey makes in his letter concerning the Hoover recommendations, as follows:

"We do not wish to appear either radical or pessimistic, but we are not in full harmony with the recommendation of the Hoover committee. We believe that an ounce of prevention is worth a pound of cure—that the saving is so small the risk would not be justified.

"We have tried to make our code so as to eliminate waste; first, by having only one grade of pipe and fittings, traps, etc. This reduces the overhead on plumbers

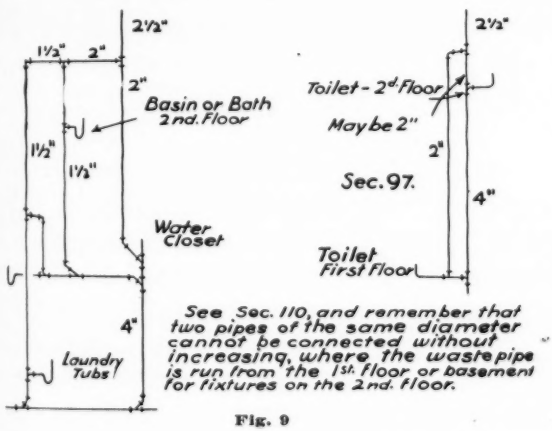


Fig. 9

and jobbers. Second, by having the work installed with the least material possible to make a safe, sanitary job. We believe that, by eliminating all special material and confining our code to one grade of soil pipe and fittings, we have reduced the cost of plumbing more than can be done by special sizes of pipe for the different classes of buildings or the elimination of a few vent pipes.

"I have not the time to go into detail in the many things that could be said both for and against the Hoover code, but the plumber will have to be educated to install plumbing with the least material possible, and the architect will have to draw plans for a bath room,—not draw the plans showing all the rooms and if any space is left, make a bath room out of that, and let the plumber worry about the installation."

Ever since the Hoover code and report were first published, we have been strong for it, and have not been at all backward about letting the fact be known. At the same time, we hope that we shall never get to the point where we tie up to any thing that originates in the human mind, as some thing that cannot possibly be improved.

And so, we haven't the least doubt whatever that the Hoover recommendations, probably in many ways, can be and will be improved upon. And we think that all, including those responsible for the Hoover recommendations themselves, should at all times be open-minded and ready to receive suggestions for improvements.

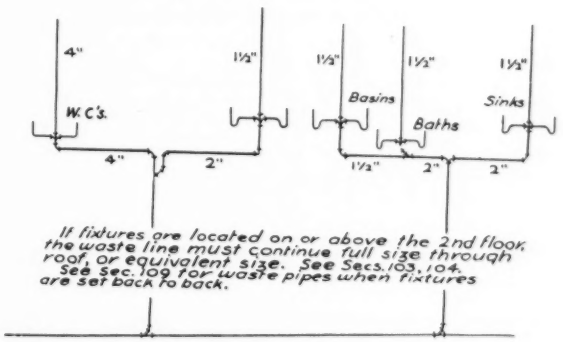


Fig. 10

Referring again to the Portland interpretative drawings, we show in Fig. 3 a reproduction of one of the detailed drawings.

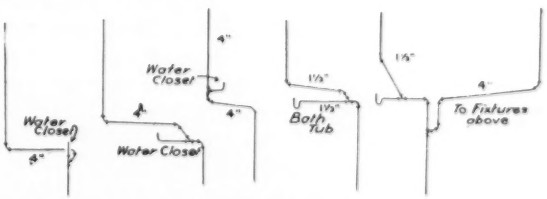
This elevation shows a typical layout for the bath rooms in an apartment building, the connections being in accord with accepted practice. The drawing shows pipe sizes and refers to the several sections of the code which give all information that could be desired.

Venting Requirements Explained

Another typical layout is seen in Fig. 4, which shows certain methods of venting allowed by the code. These methods include three different kinds of vents for water closets, also continuous venting for elevated fixtures.

The important subject of circuit venting is covered by a drawing such as Fig. 5. A note refers to Sec. 113, from which we find that the three ways of installing the vent, as illustrated, are as follows:

"A yoke or continuous vent may be used for a battery of water closets, if the last closet be located on a forty-five (45) degree waste line, or on a vertical vent line, or if the vent be connected at a point between the last two closets. The main stack shall be located on the soil line within six (6) feet of the first toilet. The diameter of a



Manner of Venting Fixtures where Partitions are not Over One Another. See Sec. 108

Fig. 11

yoke shall be not less than that specified in the following table:

WATER CLOSETS SERVED NUMBER	DIAMETER OF VENT INCHES
1 to 4	3
5 to 12	4
13 to 20	5
21 and over	6

It will be seen that between the printed section and the illustration, the subject of the yoke vent is fully described.

It will be noted that the Portland code alludes to what

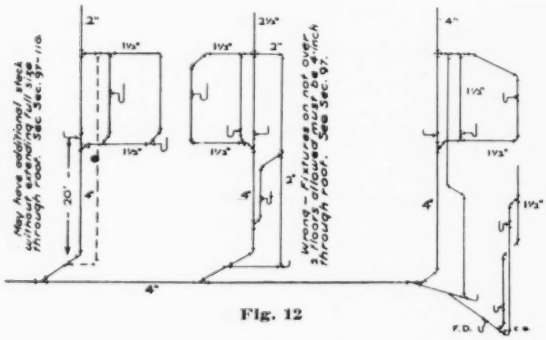

May have additional stack without extending full size through roof. See Sec. 97-116
Wrong - Fixtures on not over 3 floors allowed 2" stack through roof. See Sec. 97.
20'
4'
F.D.

Fig. 12

is commonly called a circuit vent, as a yoke or continuous vent. What is generally known as a continuous vent is the type of venting used for the lavatories in Fig 4. This illustrates very clearly the confusion that now exists in plumbing terms.

Condensing Tank Provisions Unusually Complete

Fig. 6 shows the connections for a condensing tank, giving its minimum dimensions, the method and point of connection of inlet, outlet and vent pipes. The drawing refers to Sec. 152 of the code, and as this section is unusually comprehensive, we give it in full, as follows:

"Section 152. (a) The discharge from boiler blow-offs shall not be directly connected with any sewer, house drain, soil or rain water conductor, but shall be connected to a condensing tank; the waste or overflow shall be taken from the bottom of the tank, forming a deep-seal trap, which shall be carried to the drainage system in an extra heavy cast iron pipe. Every such tank shall be provided with at least one 2-inch vapor pipe, run independently through the roof or to the smoke stack. The tank shall be of sufficient size to accommodate a volume of water of a sectional area equal to the horizontal projection of the boiler served, and of a depth equivalent to one gauge as measured on the boiler, but in no case shall the tank be of less dimension in horizontal projection than 24 inches by 36 inches.

"(b) No steam exhaust, steam trap or drip pipe under pressure shall be connected directly with any sewer, house drain, soil or waste, or rain water leader, but shall connect to a receiving or blow-off tank as required for boiler blow-off. The tank shall be large enough to cool the water to a temperature of not more than 140 degrees Fahr. before discharging into the drainage system.

"(c) Drip pipes from radiators, steam tables, etc., may discharge over a floor drain or open fixture where the volume of water discharged does not exceed 10 gallons per hour.

"(d) Heating boilers, where the pressure does not exceed 5 pounds, may discharge over a floor drain or open fixture.

"(e) Within the meaning of this section, any boiler

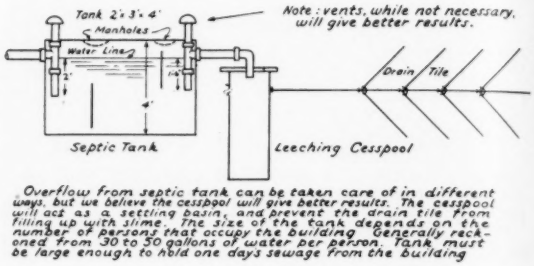

Tank 2'x 3'x 4'
Manholes
Water Line
Note: vents, while not necessary, will give better results.
Drain Tile
Septic Tank
Leeching Cesspool
Overflow from septic tank can be taken care of in different ways, but we believe the cesspool will give better results. The cesspool will act as a settling basin, and prevent the drain tile from filling up with slime. The size of the tank depends on the number of persons that occupy the building. Generally reckoned from 30 to 50 gallons of water per person. Tank must be large enough to hold one days sewage from the building

Fig. 13

blow-off, steam exhaust, steam trap or any other steam pipe where the pressure exceeds 5 pounds, shall be governed by paragraphs (a) and (b).

"(f) The discharge from blow-offs or receiving tanks shall be taken from the bottom of such tanks. See paragraph (a)."

This section, with its six paragraphs, covers the entire subject about as satisfactorily and comprehensively as any plumbing code we have knowledge of.

Dental Cuspidors

Fig. 7 is another of the drawings, showing the connection of dental cuspidors. Section 122 referred to, has the following:

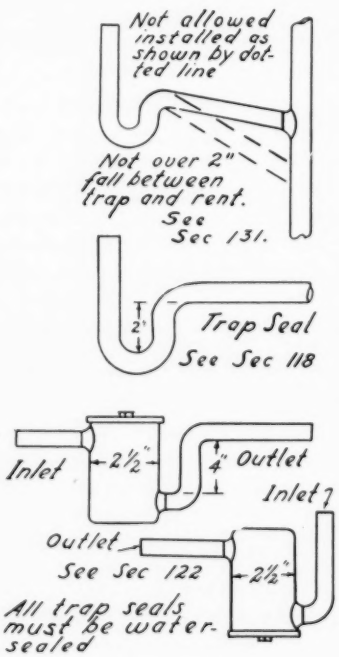


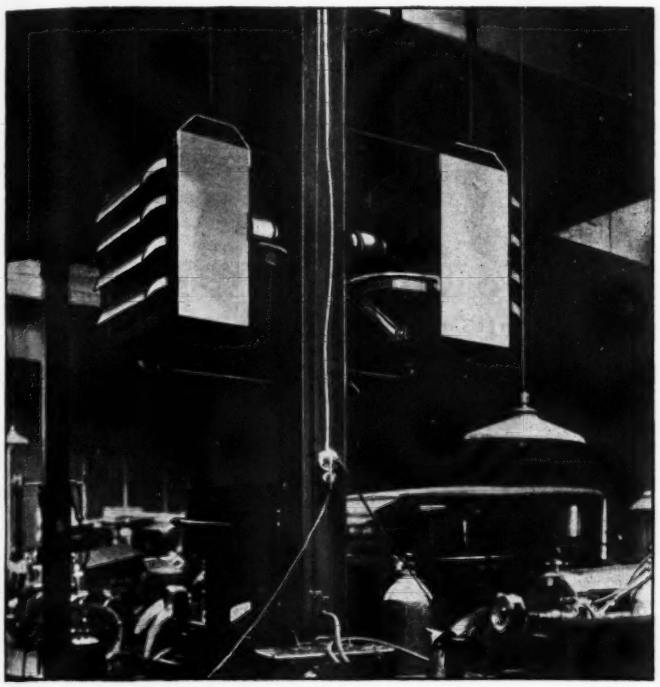
Fig. 14

"Every trap shall be provided with a vent, except that a vented trap for a restaurant sink, a wash basin in a barber shop, a soda fountain, a vegetable spray sink, a fountain cuspidor or similar fixtures, when the installation of a vent would not be feasible, will not be required, but in such event such trap shall be of the drum type, in diameter not less than 2½ inches, with a water seal of not less than 4 inches."

One of the drawings gives very definite information as to what types of traps are not allowed. This drawing and the note accompanying it is shown in Fig. 8.

Fig. 9 also emphasizes and makes definite the requirement that where vent pipes connect into each other when of the same size, the pipe size must be increased.

(Continued on Page 125)

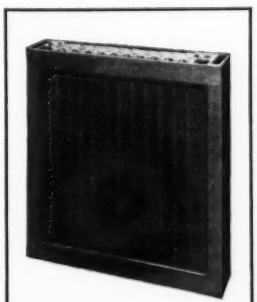


The First and Last Word in Unit Heating

TRANE

TRANE has developed a line of unit heaters which have become the choice of those who demand equipment which is engineered to perform consistently better and more economically. The Trane patented heating element is unique. There are no soldered, welded or brazed joints. The seamless copper tubes are rolled into headers like boiler tubes, a type of construction noted for extreme ruggedness. Smooth one piece, metal fins give an unusually high heat transmission ratio per unit of weight and also offer minimum resistance to the circulated air. Trane Unit Heaters are tested to a 350 lb. pressure.

Trane Float Drip Trap.

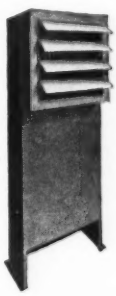


Trane manufactures Blast Heating Units, embodying the patented Trane Heating Element giving unusual light weight and compactness for a given heating effect.

Heat with Unit Heaters

The original cost of Trane Unit Heating is 40 to 50% below that of cast iron radiation. In addition to that, your fuel consumption is lower and you have a scientifically correct heating system which provides healthful and comfortable working conditions. When installed with outside air ducts, you have a year-round ventilating system which will meet the strictest regulations. There are 18 sizes and types of Trane Unit Heaters to choose from.

For full information on Trane Unit Heating Systems, send the coupon.



Floor Type Re-circulating Box.

HEAT CABINETS **TRANE** CONCEALED HEATERS

PUMPS, UNIT HEATERS, AND HEATING SPECIALTIES

THE TRANE CO., Dept. 8,
212 Cameron Ave., La Crosse, Wis.

Send free booklet on "How to Cut Heating Costs."

Name_____

Address_____

City_____ **State**_____

RETAIL ADVERTISING SERVICE

Here is copy for two newspaper advertisements and a sales letter which our readers are free to use without charge. The cuts, if you want them, are sent you for twelve weeks—two new cuts every other week—for $4.20.

One Bathroom is Out of Fashion Now

AND, as is often the case, the fashion for at least two bathrooms for the home is founded on sound necessity. Where more than one person must be at school or office at a certain time in the morning, one bathroom is inadequate. One member of the family, at least, will be delayed. Modern homes, you will notice, are advertised as having two baths. We can fit an extra bath in your home. Let us show you how. No obligation.

(In this space your Name, Telephone Number and Address)

NEWSPAPER AD No. 39

"ROOM AND BATH" IN THE PRIVATE HOME

"It is strange," says Harry Brown, local plumbing and heating contractor, "how many of us who wouldn't stay in a hotel without a private bath will share the bathroom at home under the greatest disadvantage.

"I want to be at the office at a certain time, let us say. But my daughter or my son likes a morning plunge. And these youngsters like to spend quite a bit of time making up for the lack of beauty sleep. So I go to the office without my morning bath—and I may have shaved looking into the mirror over my son's shoulder.

"And, of course, if there's a family guest overnight, I may go to the office without my shave. Which makes me look—and feel—like a bear. It's needless when a space five feet square will accommodate a bathroom with standard fixtures."

SALES LETTER No. 18

HARRY BROWN
PLUMBING & HEATING

Two Rivers, N. Y.
September 7, 1929.

Mr. Edward Jones,
Two Rivers, N. Y.

Dear Sir:

In every family of more than two people, an extra bathroom is a necessity.

You want to be at the office at a certain time; others in the family must be at their offices or at school at a certain time. And those times are so nearly parallel that one bathroom will not give each member of the family an opportunity for the morning bath which helps so much to get the day started right. If there is a guest, the problem is made more difficult.

Then, too, there is the matter of house values. With real estate moving slowly, the house with two baths has an advantage in the market. And when real estate is moving briskly, the house with two baths will command a higher price—and the increase in price will outweigh the cost.

A very small space will accommodate a standard bathroom. We'd be glad to study your home with a view to adding this great convenience. No obligation to you, of course; but we believe that the many advantages of the second bathroom will recommend its installation to you.

Very truly yours,
HARRY BROWN.

AT LEFT and right you will find newspaper publicity items. Clip them and hand one each week to your local paper. Get your name in the news columns as well as the advertising columns.

Set the Alarm for the Heating Plant

THIS winter let the heating plant "get up" before you do. A modern control system will give you a warm house when you get up, with no more effort than setting an alarm clock. If you get up at six-thirty, set the clock for, say, five-thirty or five-forty-five, and at six-thirty your house will be warm. We'd be glad to explain the modern heat control devices without obligation on your part. You'll want and enjoy this idea of automatic control for the heating plant.

(In this space your Name, Telephone Number and Address)

NEWSPAPER AD No. 40

ALARM CLOCKS FOR HEATING PLANTS

"Nowadays," says Harry Brown, local plumbing and heating contractor, "you get your beauty sleep by putting an alarm clock on the heating system. When it's cold in the morning, it's tough to get up an hour before the rest of the family, shuffle into the basement, and stoke up.

"All that's necessary to eliminate these early-morning trips to the basement is an alarm clock for the heating plant, which will wake it up an hour before the family gets up. Then the house is warm and every one has had those last few minutes of sleep that are so precious.

"At night you set the clock, and at five-thirty, or whenever you say so, the heating plant goes to work. By the time the family is ready to get up, the house is at the normal day-time temperature and the morning bath may be taken in comfort without rushing to force the fire."

Copy for an Educational Leaflet

Is One Bathroom Sufficient Any Longer?

_____

_____

_____

_____

_____

_____

Copy A

_____

_____

_____

_____

_____

_____

(In this space your Name, Telephone Number and Address)

AT the left we show layout for one of the educational leaflets in the series being published on this page. The copy is below. All you have to do is show copy and give the cut to your local printer—he can make it up in just the size shown, to be kept in your sales room and enclosed in letters. The copy can be used on a blotter, also. (35c for the cut.)

Copy "A"
for the Educational Leaflet

Is One Bathroom Sufficient Any Longer?

IT HARDLY seems so. Even where there are only two people in the family, the presence of a guest creates embarrassing problems. And where there are more than two members in the family, a second bathroom is a necessity, particularly where several members of the family must be at offices or at school at approximately the same time in the morning.

In almost every home there is sufficient waste space to provide for the extra bathroom. A space only five feet square is sufficient to accommodate a standard modern bathroom, with the three fixtures of regular size. It makes a compact, convenient room.

We should be glad to go over your house with you and show you how an extra bathroom can be installed.

Copy for a Statement Enclosure

(To be set up by your printer just as shown here and sent with statements of overdue accounts. This form is actually used by a plumbing and heating contractor.)

Nobody Loves Bill

There is something unpleasant about a bill. We know just how it is. An account may be ever so just, and yet—well, no one likes to receive bills.

So, in handing you this statement covering your account for $....., we would like to have you consider it not as a cold, formal dun, but simply as a reminder from good friends of yours.

As you will note from the statement, this account is now due. And of course we know that you will give it your usual prompt attention. But we just want to take this opportunity to let you know that we are grateful for your patronage.

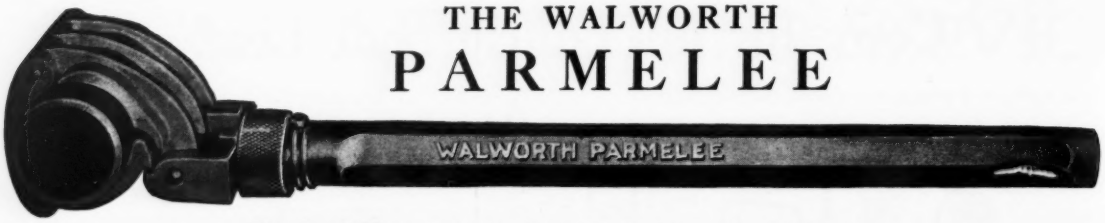
In the old days, you know, tradesmen had a habit of presenting bills in person, with a cheery "Thank you!" for each customer. Somehow, we rather like that idea. And so we cling to the custom, even though necessity forces us to send the greeting by our friend, the postman.

We hope we may be of more service to you and will appreciate a call from you at any time.

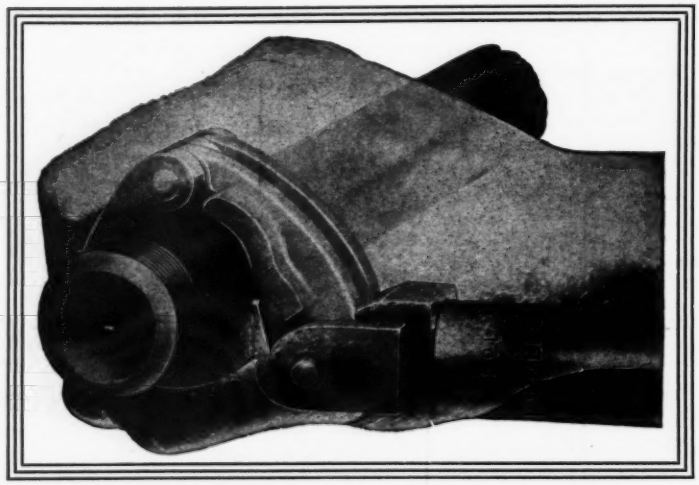
(Your name, telephone number and address here.)

THE WALWORTH

PARMELEE



Nut Lock Type—Made in 4 sizes for pipe from ⅜ to 4 inches.



A GRIP OF STEEL

takes hold like the human hand

The Walworth Parmelee is the toothless wonder among pipe tools. With knuckles and fingers of forged steel, it grips like a human hand of gigantic strength.

All parts of the Parmelee are now given the special Pyrochron heat treatment which is used to strengthen and toughen the Master Stillson. As a result, this improved Parmelee is far more durable than the old wrench.

The Parmelee is at its best on brass pipe and smooth rods, and in close quarters where elbow room is scarce. It is made in two types; No. 1 Sleeve Lock; and four sizes of the Nut Lock pattern, for ⅜ to 1 inch, 1 to 2 inch, 2 to 3 inch and 3 to 4 inch pipe respectively.

WALWORTH

Walworth Company, General Sales Offices: 51 East 42nd St., New York
Plants at Boston, Mass.; Kewanee, Ill.; Greensburg, Pa., and Attalla, Ala.

Distributors in Principal Cities of the World

Walworth International Co., 11 Broadway, New York, Foreign Representative
Walworth Company Limited, 620 Cathcart Street, Montreal, P. Q.

The Heating Plant *and* Anthracite Sizes

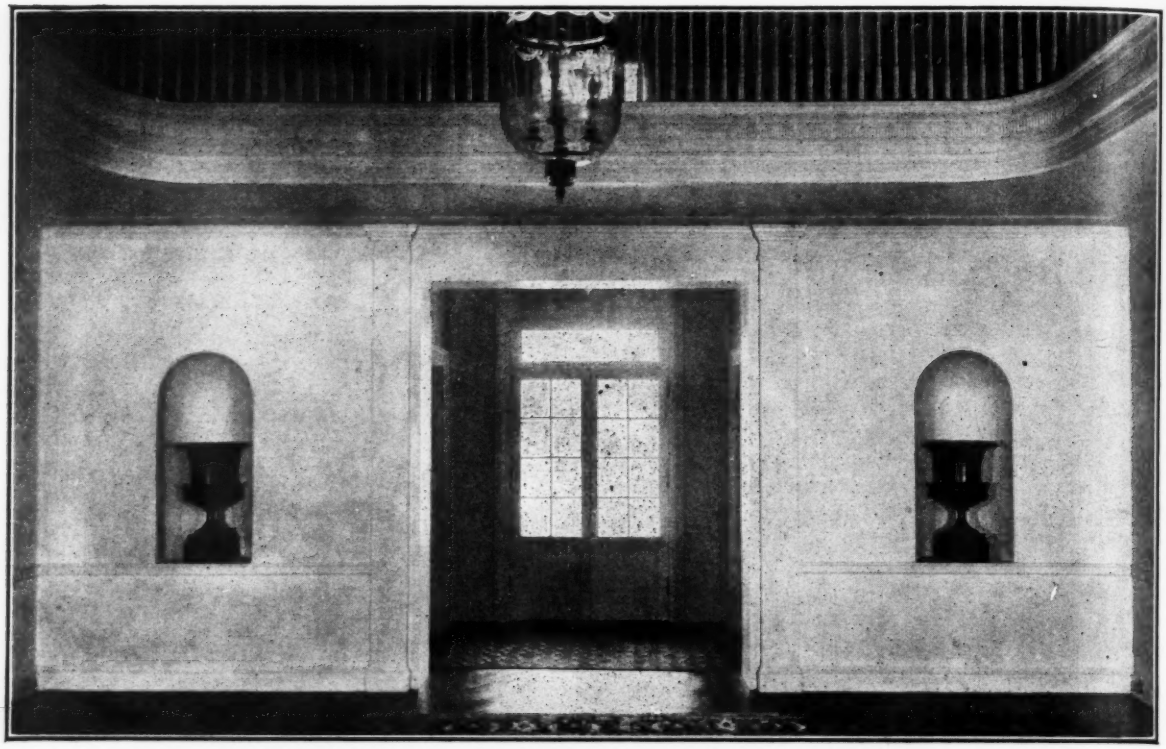
Fig. 1.—View of the test set-up of the house heating boilers used in determining the effect of anthracite fuel sizes in operation results

Recent Research to Determine the Proper Size of Coal for Domestic Heating Plants

DEVELOPMENT in the heating contracting phase of the heating industry have brought about some very interesting conditions. The successful contractor recognizes this development and is adjusting his methods in accordance with the new demands. As one contractor expressed it the other day in describing the changes in only one branch of the heating business, namely chimney sweeping, "We grew with the trade—from the wearing of stove pipe hats and the parading of ourselves to the building where the heating plant and chimney was to be cleaned by the employment of mechanical air suction systems mounted on motor trucks."

Modern apparatus with the variety of heating systems demands specialization. It is imperative that the contractor of today be completely familiar with all of the features of the work he handles to the point of being an expert. However, contracting does not stop with making a perfect installation. Herein lies the difference between the contractor and the mechanic. When a contractor becomes so absorbed in the installation phase of his work that he forgets to consider what happens when he delivers the plant to the owner for operation, he is carrying specialization to a fault and reaches the point where he is more of a mechanic than a contractor. In other words, the contractor must keep one eye on the details involving the highly specialized aspects of his work and at the same time keep his other eye on the objective of his business.

It is generally conceded that if a contractor intends to stay in business he must render service with the result that modern businesses have come to adopt that as their objective. In the particular case of the heating contractor giving service, aside from the mechanical features of installation, it is necessary for him to be able to pick up with the owner, the thread of installation develop-



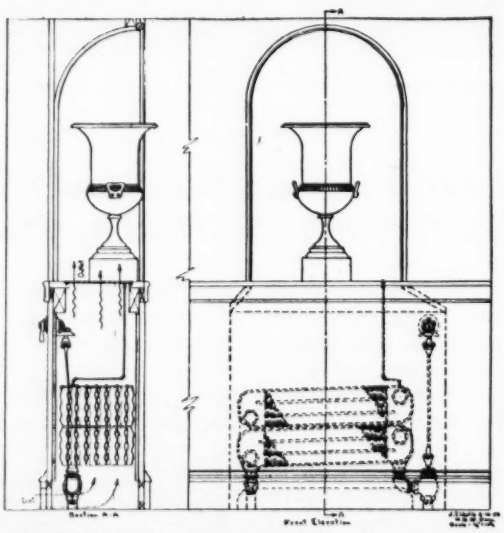
Grilles in the floor of niches admit heat from Robras 20-20 radiators in the house of C. H. Mattheison, Jr., Center Island, L. I. Hines Brothers, Great Neck, L. I., Heating Contractors.

Can ROBRAS 20-20 Radiators be Used Without Grilles in the Face of the Wall?

THERE are several ways in which Robras 20-20's can be used without grilles in the face of the wall. One way is to use Robras 20-20's as direct-indirect radiators with floor grilles. The light weight of these radiators permits an installation of this sort without great expense.

Pictured above is another way of meeting the problem. It requires, of course, that the wall be designed for such an installation. Here the outlet grilles are installed in the floor of each of the niches.

When desired to get the full efficiency of the Robras 20-20 radiators the urns can be removed to give a fuller opening for the passage of the warm air. Cold air finds its way to each radiator through the floor opening on the reverse side of the wall.



Method of installation showing inner opening by reverse wall.

The light weight of these radiators makes installation much less expensive and therefore there is a greater profit in installing them. Their small size and adaptability makes the finished job more satisfactory to your customer, who wants the radiators out-of-sight and out-of-the-way.

We have price lists and data sheets ready to send you if you will please send us your name.

ROME BRASS RADIATOR CORPORATION

ONE EAST FORTY-SECOND STREET • NEW YORK CITY

ment from the point where he might reasonably be expected to stop, and carry the owner to the point of successful operation of the plant where full efficiency and satisfaction are obtained.

Contractor Must Instruct Owner in Operation

Many a heating plant of perfect design and installation from the heating contractor's standpoint has failed, in service, to provide satisfaction because of improper operation which in most cases is due to a lack of information. The result, for want of a better subject, is the placing of the blame on the installation or, better still, on the heating contractor who made the installation.

This is where successful mechanical installation ends in effect and where successful contracting or servicing begins and in order to rise to the occasion the heating contractor must have his eye on his objective, must be able to recognize the difficulty and must be informed to correct and instruct. This also brings us to the substance of our article which is to consider fuel sizes and their effect on the operation of the ordinary heating plant.

A complete knowledge of fuel sizes and their respective limitations and characteristics will go a long way in enabling the contractor to prescribe the size of coal which may be burned in each particular installation to best advantage. For instance, where there is only a moderate draft a larger fuel size will be necessary than if there were a very strong draft, other things being equal.

Research Report on Fuel Sizing

Recently research was conducted by the mechanical engineering department of the Towne Scientific School, University of Pennsylvania, under the supervision of Dr. R. H. Fernald, director of the department, to determine the effect of varying fuel sizes or mixtures of sizes upon the economic value of anthracite coal as used in house heating equipment. The detailed tests were made in three distinct series based on present day commercial anthracite sizes as follows: Egg series, anthracite egg coal with varying proportions of stove, stove and chestnut, or stove, chestnut and pea; chestnut series, anthracite chestnut with varying proportions of pea and buckwheat; pea series, anthracite pea with varying proportions of buckwheat. The relative sizes are indicated in Table 1.

The equipment used in the investigation included: 1—Sectional water-tube boiler of a size usually installed in large residences, apartment houses, churches, hotels, clubs, stores, etc. 2—Sectional single grate magazine type heater of a size usually installed in moderate sized houses. 3—Vertical round boiler of a size usually installed in the average house. 4—Hot water service boiler. Definite steam and hot water demands were placed on the several pieces of equipment.

Mixtures for Heaters with Thin Fuel Beds

It was concluded that for heaters with relatively thin fuel beds, of the several sizes of anthracite and mixtures of sizes tested, sizes ranging from commercial egg to pea with 60 per cent buckwheat, the standard commercial egg proved distinctly less efficient than any of the other sizes or mixtures of sizes. Also, all the mixtures of sizes smaller than standard commercial egg—namely, mixtures of chestnut with 15 to 65 per cent undersize, mixtures of egg with 40 to 83 per cent undersize, mixtures of pea with 15 to 60 per cent undersize—have essentially the same efficiencies, although the advantage was slightly in favor of pea with 15 to 45 per cent buckwheat. The saving in fuel consumption by the use of sizes smaller than standard commercial egg with relatively thin fuel beds was of the order of 8 to 11 per cent. This means that, with the use of the proper size of fuel, a coal bill which would ordinarily be $200.00 when improper oversize fuel is used would be reduced to $180.00.

Mixtures for Heaters with Deep Fuel Bed

For heaters with relatively deep fuel beds, of the several sizes of anthracite and mixtures of sizes tested—sizes ranging from standard commercial egg to pea with 60 per cent buckwheat—the standard commercial egg proved equal in efficiency to the mixture of 40 per cent pea and 60 per cent buckwheat, but distinctly less efficient than any of the other sizes or mixtures of sizes. For heaters of the thin bed type the size of mixtures designated under the heading of egg with 5 per cent oversize and from 40 to 83 per cent undersize, chestnut with 5

(Continued on Page 126)

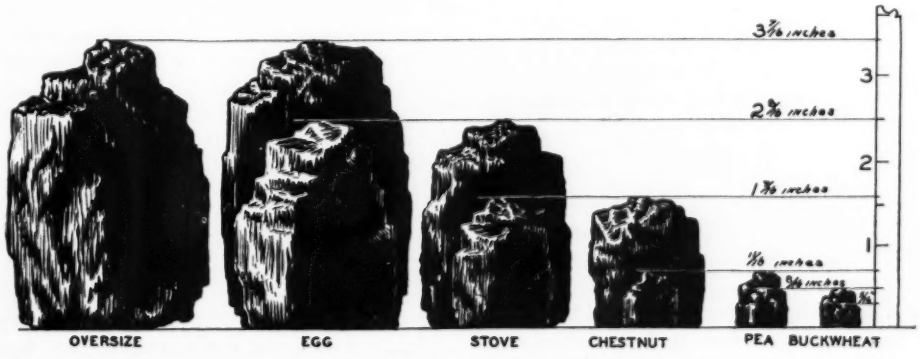


Fig. 2.—Diagrammatic illustration of the grading of anthracite fuel sizes used in domestic heating. It was found that proper combination of these sizes, to fit the various conditions of burning, is of great importance

Progress *in the* Oil Burner Industry

By C. H. CHALMERS, E. E.

Past President American Oil Burner Association

THE American Oil Burner Association has held seven annual conventions. At the last five there has been an oil burner show in connection with the convention. At these shows the newest and latest models of the leading manufacturers have been displayed.

The oil burner in the American home has progressed steadily, and if we forget the natural draft type, the number sold each year has been an increase over the year before. Naturally there have been a great number of engineering problems to solve. In fact, there has been developed in the past decade a new branch of engineering. It might be termed oil combustion engineering. Of course, a better terminology than this may come.

Sixty years ago and less, about the only recognized branches of engineering were civil engineering and military engineering. Our machine age, with its advances in electricity and chemistry, has widened the field until today we have highly trained engineers who are almost complete strangers to each other's work.

Oil Burner Has Developed New Type of Engineer

The oil burner has called for and has developed a new type of engineer. This late addition to the engineering field must have a good working knowledge of combustion, of machine design and of electricity. I have in mind, of course, those engineers who are to be found around the manufacturing plants where burners of the successful types are designed and built. Burner design has already passed pretty well beyond the inventor stage. It practically no longer happens that a burner results from a "hunch" that some inventor may have. This is also true of automobiles, iceless refrigeration, etc. The burner industry has accumulated a vast store of technical information. This is stored in books, magazine files, patents and laboratory notes and field experience, so that the man outside the industry has very far to travel before he is anywhere near abreast of those within the industry.

At the 1929 oil burner show in New York City not a single freak burner was on display. Each and all were of some standard type. Many different designs were shown and each could point to a background of many successful installations.

The lay reader naturally asks why isn't there one type that is best, and if so, why will it not eliminate the others. Ask that same question of the automobile industry, and if that doesn't throw some light on the subject, ask it of the heating industry. As well ask why one type of home will not supplant all the others.

As the years go by the burner steadies down into types. I predict there will be practically no more new types and that some of the present types will succumb due to the laws of competition. At the same time these same laws of competition will tend to refine and perfect the remaining types. So little changes and betterments will come along. Existing designs and models are worthy of high praise and every confidence can be placed in their performance, but the progress in refinement continues. The noticeable thing is that the rate is slowing up and the improvement is in minor detail.

Various Parts Developed

Oil burner controls have reached a high stage of perfection. Radio interference, even for the continuous spark ignition, has been all but whipped. Screens and nozzles need still more work. Some one will bring out a nozzle that won't rust nor cut out. An agate orifice has been suggested. Motors have been brought to a high standard of power factor and efficiency.

The reduction of noise in oil burner operation has steadily advanced until very little is left to be desired. Flame noise is so refined in most good burners, that one can not tell whether the fire is burning or not. Mechanical balance of fans and motors is so perfect that a coin can be set on edge on the polished and rounded surface of the motor, or fan, and it will stay there indefinitely so far as the burner is concerned.

Quiet pumps, pumps that do not leak, pumps that need no packing, pumps that have high efficiency, need no lubricating, and that do not lose their prime, and will deliver oil under pressures up to 800 pounds to the square inch and operate at motor speeds, are available.

Standardization of Oil Grades

Standardization of oil grades is bound to affect oil burner design. It gives the designer a definite objective at which to aim. The designer has looked forward to it and longed for it, and at last standardization for domestic and industrial fuel oils is here, the recommended commercial standards having become effective July 1, 1929. In accordance with the action of a general conference representing refiners, distributors and consumers of fuel oil, manufacturers of oil burners and others generally interested, the Department of Commerce submitted, for the approval of the industry, the recommendations.

The American Oil Burner Association, the American Petroleum Institute and the Bureau of Standards at Washington, D. C., have divided oil fuels into six classes or grades, have drawn up detailed specifications for each grade, and have adopted these as standard. These grades are numbered from 1 to 6 inclusive. Numbers 1, 2 and 3 are, respectively, light, medium and heavy distillates for domestic use. Number 2 is a very excellent fuel. It is relatively cheap and the fact of its being clean keeps it from filling up the screens and annoying the owner of the burner with the expense of service calls.

Numbers 4, 5 and 6 are, respectively, light, medium and heavy industrial fuel oils.

General requirements provide that the properties of grades 1 to 4 inclusive shall be as follows: they shall be

(Continued on Page 139)

That Different Bath Fixture

is also made in a round pattern with all-metal trim

You have three choices in selecting this unusual bath fixture. It is made in Art Chrome, a very distinctive octagonal design, with all-metal trim; also in the round pattern illustrated, with all-metal trim; or, if you prefer, with china trim. Either of these designs should satisfy the most exacting requirements in bathroom decoration.

But this bath fixture has more than good looks. It has five exceptional practical features that help to make it easier for you to interest the architect, builder and owner. They are points that can be readily appreciated by expert or layman. It is a fixture that will stay sold and bring increased sales to plumber and jobber.

5 *Unusual Selling Points*

1 **Shower Head.** The removable face comes off by loosening the center screw, not by unscrewing face plate. Screw cannot fall out. A great improvement that will benefit all who have tried to remove screwed-on face plates.

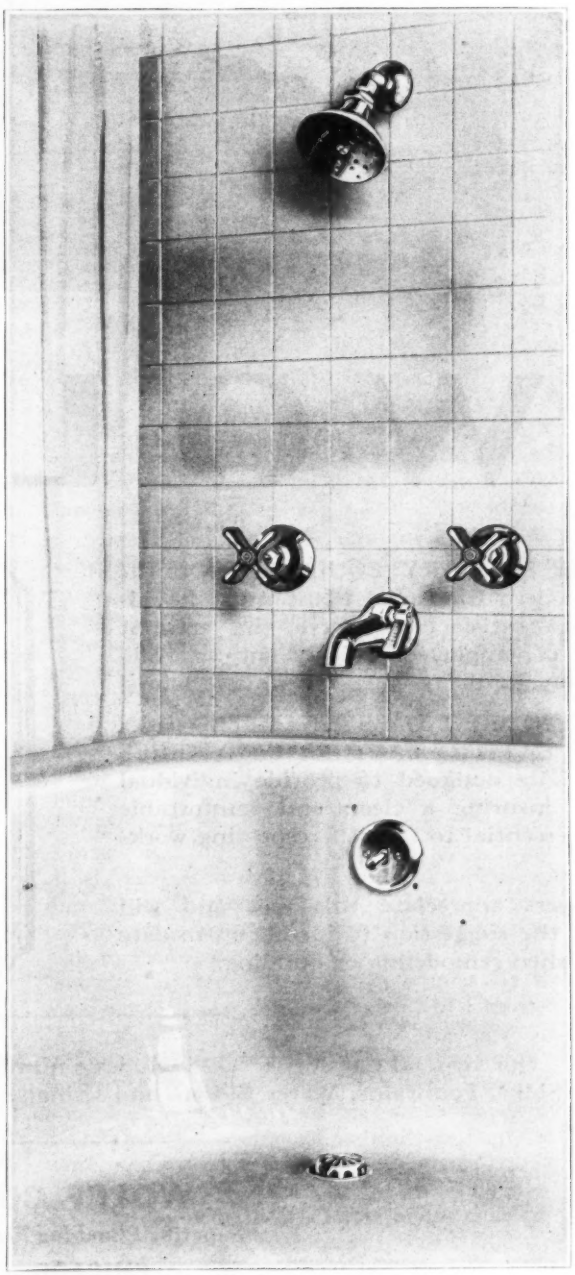
2 **Diverter Valve.** The handle on the spout reads, "TURN ON WATER THEN LIFT FOR SHOWER." Before raising the lever the user can temper water at spout. When HOT and COLD valves are shut off, the diverter drops back, *automatically*. It is always in position to fill the tub when the water is off. There is no necessity for the user to watch out for the lever being up or down when turning on the water. You can't get a shower unless you want one!

3 **Mechanical Waste.** As simple and efficient as the old style chain and plug, only the chain is inside the waste tube. Nothing back of the tub to give trouble. Minimum waterway restrictions—no dirt or hair catchers. When pop-up is open chain rests snugly against top of waste tube. No seats to become pitted and water cut. Seat and plug in waste outlet. Ball joint head fits slope of any tub—overflow ell held to tub by lock nut. Brass friction rings at every joint to insure permanent tightness. Stopper easily removed by simply lifting out plug.

4 **Diverter Valve on face of wall**—not in the wall. Readily accessible.

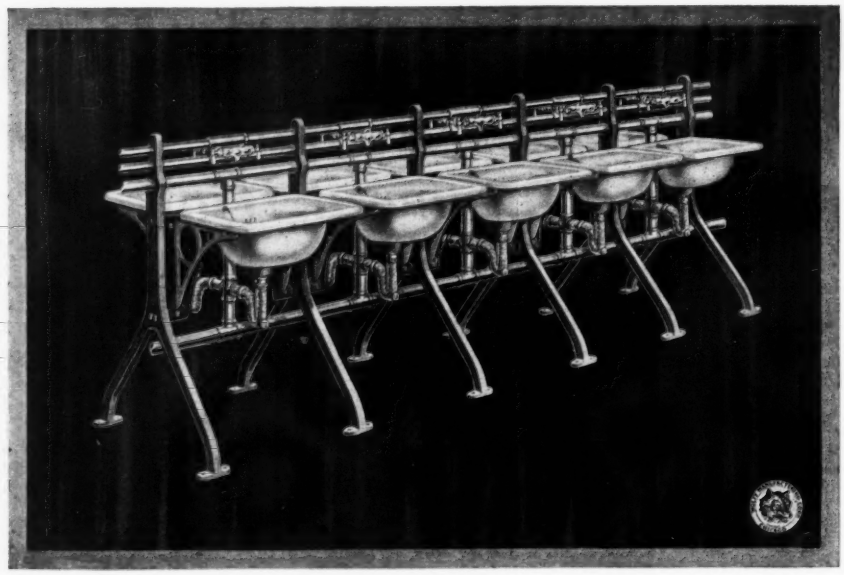
5 **A faucet with a removable unit that's as easily renewed as a light bulb.**

Write for a copy of our new folder on "that different bath fixture".



The Chicago Faucet Co.
2700-22 N. Crawford Avenue
CHICAGO, ILL.

CHICAGO FAUCETS



WOLFF

THE SANITARY EQUIPMENT OF the modern Industrial Plant must be adequate to satisfactorily serve the greatest number of employees quickly and so avoid congestion and delay when the whistle blows.

WOLFF "CARBONDALE" ENAMELED IRON DOUBLE BATTERY FACTORY LAVATORIES are specially designed to provide individual facilities insuring a clean and comfortable wash so essential to the self respecting workman.

Employers appreciate this fact and will welcome the suggestion to install up-to-date fixtures when remodeling or building.

CARBONDALE DOUBLE BATTERY FACTORY LAVATORIES

Our General Catalogue "G" includes a number of special Factory Lavatories, Sinks, Fountains, Water Closets and Urinals. Write for a copy.

WOLFF CO.

"Superior Plumbing Fixtures"

CHICAGO

Branches and Distributors in all Principal Cities

SUPERIOR PLUMBING FIXTURES

Co-operative Plumbing Research *at* Massachusetts Institute of Technology

By R. M. STARBUCK, JR.

ONE of the most encouraging developments that has come to the plumbing trade in recent years is the effort on the part of an increasing number of our great engineering institutions, to place the brains of their faculties and the engineering equipment that they possess, at the service of the plumbing industry.

This has been accomplished by the presentation annually of what has come to be known as a short course.

The short course consists in an intensive program of lectures, and laboratory demonstrations usually covering two or three days. These courses are generally offered to all branches of the plumbing industry of a certain section. Massachusetts Institute of Technology extends an invitation, for instance, to the plumbing industry of the state of Massachusetts. At the same time, we have never known of any of these institutions that did not cordially welcome those who desired to attend from outside the stated limits. Therefore, it is not surprising to see in attendance at the Massachusetts Institute of Technology plumbing conferences, men from all the other New England states.

Opportunity for Plumbers to "Go to School" Again

These short courses, plumbing conferences, plumbing institutes, as they are variously known, have now become established. They are looked forward to each year by hundreds of members of the plumbing fraternity who look upon this opportunity to "go to school" again, as a fine opportunity to gain scientific knowledge of the principles underlying their business, which could be gained in no other way.

It goes without saying, that the good that is to be gained from this tying up of great educational institutions to this industry of ours, has already accomplished great things,—also, that much greater good is capable of being accomplished from this source than we have yet seen. All who have the right thought concerning the possibilities for good that are done up in the short course, are desirous of putting the movement on such a footing that the greatest good may come from it. With this statement in mind, we believe what follows will be better understood.

The short course, as we have seen it, has been presented in two different ways. Certain of the institutions that are in this work, call upon their faculty members for the entire program, while others call upon the faculty for a small part of the program, with most of the lectures being delivered by outsiders. These outsiders have in some instances been experts connected with public utilities organizations, etc., but in many other cases they have been experts in the employ of manufacturing concerns.

Engineering Institutions Give Unbiased Information

In the first place, the instruction given under such a program is naturally of a strictly scientific nature, and this is what the plumber stands greatly in need of, and in most cases is unable to get from any other source than these engineering institutions.

The instruction given by faculty members of an engineering school is unbiased,—it is not warped by any commercial element that may enter into the subject.

There is no doubt whatsoever, that the manufacturer, through his staff of experts, is able to present to the plumbing and heating trades wonderful information, and that he has been doing this for years to such an extent that the manufacturer is now recognized as a most important source, of technical trade information.

Nevertheless, it is a serious question with us whether the short course needs assistance from the manufacturer, and whether his appearance on the short course program is not actually a detriment. The manufacturer doubtless generally has the highest motive in getting onto these programs. At the same time, even though he does not intentionally make use of the opportunity for advertising gain, it is difficult to convince many of the attendants that publicity is not the moving force back of such an effort.

This feeling on our part is not the outcome of guesswork, for we have heard such suggestions freely made and discussed in groups of men attending these conferences.

The man who attends these short courses generally has to make some sacrifice to get there, and he is not the one to relish even the suggestion that the conference is perhaps being exploited for advertising purposes.

Our opinion is that the short course movement is better served when commercialism does not enter into the proposition, and that when free from such a suggestion a conference is healthier than the other type, and more sure of future support.

We think then, that to be enduring the short course should be in the hands of the faculty of the institution which presents it.

Decline in Success of Courses

Another matter, and a very important one it seems to us, is in the following. We have attended many of these short courses, in various institutions and over a period of years. In some cases, and we might

In This Fine Chicago Apartment.. Central *Quality* Fixtures

Fig. 1125 Central Blendo Lavatory Combination. Crome Plated Finish.

THIS modern and beautiful apartment at 5000 Cornell Avenue, Chicago, represents all that is new and finest in apartment house construction. As a matter of course, bath, shower and lavatory fixtures were chosen with extreme care. Grace and beauty of design and finish, utility and enduring quality are reasons why the Central Fixtures illustrated here adorn the bath rooms of every suite in this highly artistic apartment.

A Central Catalog may be helpful to you in selecting fixtures of equal charm and quality. Write for it. Central Fixtures are shown by your wholesaler.

Architects: Conley and Carlson, Chicago, Ill.

Engineer: R. E. Hattis, Chicago, Ill.

Plumber: Thos. H. Litvin, Chicago, Ill.

Jobber: Miller Plumbing & Heating Supply Co., Chicago, Ill.

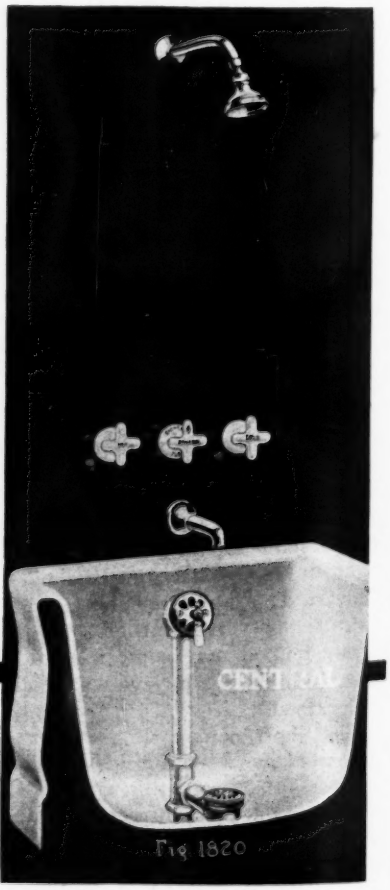


Fig. 1820 Tub and Shower Combination. Crome Plated Finish.

CENTRAL
BRASS MFG. CO.
CLEVELAND OHIO.

say in most cases, the first year or two were most successful. After that there has seemed to be a falling off to some extent in the attendance. What is the reason for this? Our own personal opinion is that the lessened interest is due largely to the fact that after a year or two of these conferences, the faculty members available for work in connection with them have used up, to a large extent, the available material that they feel would be of interest to the conference. This results in re-hashing subjects covered in previous conferences, or in presenting subjects which are not so vital to the plumber as they should be.

Attendants Must Be Given Usable Information

The attendants at these educational conferences are not satisfied with being entertained,—they are looking for instruction that will benefit them in their business. We have seen at some of these conferences quite wonderful laboratory experiments which were most interesting to observe, but at the end of the hour the members came away without a single fact that was going to be put to use in their business.

On the other hand, when an engineering institution prepares for one of these short courses, it has to make use of men who are no doubt already laboring under a heavy load. Therefore, can such men be expected to put days and days of labor into special research and into the preparation of a lecture dealing with a subject which is probably quite a bit removed from the regular work of their department?

If we have never thought of it before, we should realize that when we look to an institution to give us year after year extensive programs of new material, we are asking a great deal.

And yet, we can not be satisfied to leave the subject in any such a manner as this. The short course is too important to our welfare to do that. We must find some formula by means of which the difficulties that stand in the way may be removed.

Solution in Action at Massachusetts Institute of Technology

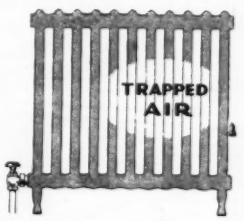
No better or more conscientious work has been done anywhere for the short course in plumbing than by Massachusetts Institute of Technology. This institution's work has been handled largely by Richard G. Tyler, professor of sanitary engineering, and it is likely that largely through his efforts, a method for meeting the situation we have outlined, may be forthcoming. Professor Tyler has written two articles bearing on this general subject, and these we are here reproducing in full, for your earnest consideration.

The article, under the title, "The Importance of Research in Plumbing," is as follows:

"The plumbing trade has not as yet awakened to the advantages which might be derived from research, well planned and carried out, looking towards the enlarging of its field of activity and the improvement of its methods. It is to call attention to some of these advantages that the present article is written.

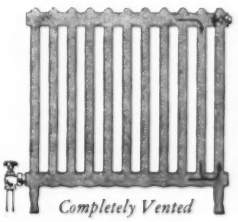
"In some industries it has long been realized that

THIS actually HAPPENS

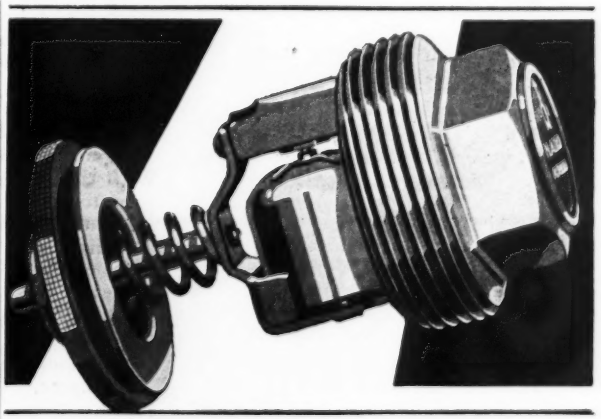


MANY *contractors have experienced this trouble.* When new water radiators are used on a steam job the steam short circuits across the top openings and closes the air valves before all the air has vented. This trapped air greatly reduces the heat output of the radiator—and often to such an extent that additional sections are necessary.

IN-AIRID is not "just another air valve"—it is the one successful solution to this problem. The IN-AIRID fits into the top plug on the vent end section of the radiator and completely blocks off the opening into the last section. Thus the steam is forced to travel down the next to the last section and up the last, driving all the air ahead, before it comes in contact with the valve and closes it.


Completely Vented

IN-AIRIDS located within the radiator cannot be tampered with. Their invisibility also adds to the appearance of the radiator.



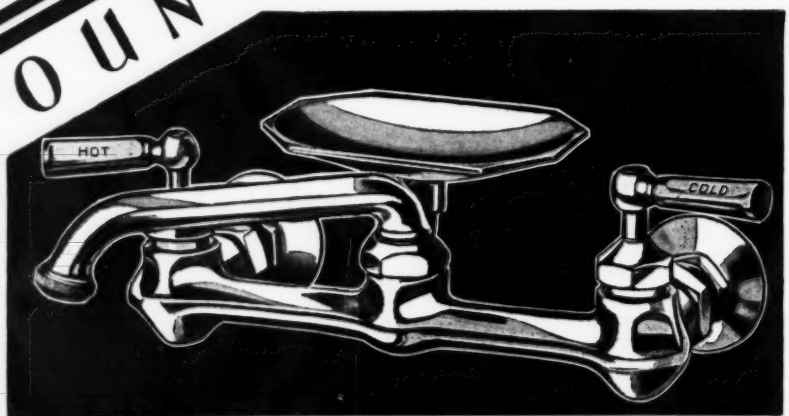
In-Airid No. 1 for Steam *In-Airid No. 2 for Vacuum*

Airid Air Valves No. 500 and Vac-Airids No. 510 for old-style steam radiators.

AMERICAN RADIATOR COMPANY

Makers of a complete line of Valves, Vents and Regulators

ANNOUNCING



Furnished with metal soap dish and metal handles only.

The CAPITOL BOHN-ART faucet

Here is the best looking and most finely made sink fixture that money can buy.

Of red brass with from 79 to 82% copper content, and chromium plated, giving it a lasting finish without attention, only the best of materials obtainable enter into its construction.

With the great interest that is now being centered by the housewife upon improving the appearance and enhancing the utility of her kitchen, this Bohn-Art faucet should prove a real money-maker for the alert dealer.

Product of one of the largest concerns in the industry, it is backed by unexcelled manufacturing facilities and financial resources. Write us for price quotation.

Bohn Aluminum & Brass Corporation

CAPITOL BRASS DIVISION

MANUFACTURERS OF BRASS VALVES, BOILER TRIMMINGS AND PLUMBERS' BRASS GOODS

DETROIT~MICHIGAN

research performed a very important function. It has opened up the way for further progress, and in those trades and professions where it has been encouraged, this progress has been much more rapid than in those where the free use of the laboratory and the technical expert has not been appreciated. Many of the large industrial organizations, such as the General Electric Company, Westinghouse or the Radio Corporation of America, retain a large staff of experts who are working continuously upon the problems, methods or materials of the particular industry, and are finding new developments which look toward an expansion and improvement of the industry. There are a large number of commercial research laboratories in existence today which are made possible by this increasing demand by industry for expert assistance in working out its problems.

"In plumbing, only a slight beginning has been made in this use of research. At the Bureau of Standards some very able work has been done under the subcommittee on plumbing, and the report of this committee has been so far-reaching in its effect that it has inaugurated a renaissance in the plumbing world. Professor Babbitt at the University of Illinois has for several years carried on plumbing research, and the Carnegie Institute of Technology is at present co-operating with the industry in various ways.

"These researches have dealt only with the more pressing problems necessary to the understanding of the fundamental principles involved in plumbing, and it would be unfortunate if the trade should assume that its problems had all been solved. It is true that we know more about what takes place in a plumbing system, and we are able perhaps to design and construct plumbing installations that will comply with the requirements of public health and safety, but this is only a beginning. There are other requirements which, while not so vital, are of considerable importance.

"Health has long been the most important factor in establishing plumbing regulations, and it is evident from the recent discussions on cross-connections that there are still matters pertaining to the relationship of plumbing to health that have not been given adequate consideration. Safety of human life has also been an important factor, especially in determining the requirements for domestic hot water systems.

"But there is another factor which is becoming more and more important in the life of the average citizen, and that factor is convenience. It is believed that there is need for research into the ways in which plumbing practice might be modified so as to bring about a maximum of convenience to the customer. What are the elements that make for convenience? This is a question that may be of greater importance to the manufacturer than to the master plumber, but it is a question in which both are vitally interested and research should be able to help in finding its answer.

"One of the advantages which comes from carrying on research in an unbiased and scientific manner is that the technical expert, not being himself a

LEADING CORPORATIONS—distinguished for the certainty with which they buy the most modern equipment and secure the most satisfactory service at lowest final cost—are installing Heggie-Simplex Electric Welded Steel heating boilers in steadily increasing numbers.

HEGGIE-SIMPLEX BOILER COMPANY
JOLIET, ILLINOIS
Representatives in Principal Cities

Pat'd 9-21-26

The
BADGER WASTE
another article that "made Milwaukee famous"!

Write for catalogues
The Milwaukee Flush Valve Co.
Milwaukee, Wisconsin

Fig. 2085

WRITE for Water System Catalog K which gives complete information on Deming Shallow and Deep Well Water Systems for practically all requirements.

THE DEMING CO.
Salem, Ohio :: Est. 1880

Deming

Now!
In Color

COLOR IN THE LAUNDRY

Alberene Soapstone Laundry Trays

Alberene Stone Co., 153 W. 23rd St., New York City

Building is Active in Suburbs
San-Equip Septics in Demand

LACK of sewers doesn't stop building, and it gives you an extra profit. Install a San-Equip Septic and complete inside plumbing.

Sewage disposal affects the health and comfort of the home. To install less than the patented San-Equip unnecessarily endangers the family and community. To install any other system with San-Equip patented features is an infringement which makes dealers and owners liable for damages.

San-Equip Septics are sold everywhere in the U. S. and offer real value and real service at a very moderate cost.

Write today for prices and full dealer information

CHEMICAL TOILET CORPORATION
938 E. Brighton Ave. Syracuse, N. Y.

FLAGG FITTINGS

FF

FLAGG FITTINGS have been manufactured for three generations. They have gradually grown in popularity until today FLAGG FITTINGS are used in all sections of the world.

FF

STANLEY G. FLAGG & CO., Inc.
1421 Chestnut St.
Philadelphia, Pa.

Build your reputation on LEAD *—the dependable metal.*

EAGLE-PICHER

SELL
The COMPLETE DURO LINE in '29
Get all the details on Duro, the most complete and profitable line of water softeners, electric water systems, filters and septic tanks on the market. Write for new Duro Catalog and Price Sheet.
THE DURO COMPANY
Dayton, Ohio
DURO
WATER SYSTEMS
AS LOW AS
$69.50 F.O.A. DAYTON
DURO
WATER SOFTENER
AS LOW AS
$76.50
DURO
Water Systems — Water Softeners

plumber, can see the problems from a point of view quite different from that of the latter. He is able to utilize, and should have at his finger tips, the progress that has been made in other industries which involve similar principles, to the particular research which he is carrying on. He is free from the superstitions and the rule-of-thumb practices which grow up in, and hamper every trade. The industry has become so accustomed to many of its limitations that it takes it for granted that these limitations cannot be removed. Take as a single example the question of noise in the discharge of plumbing fixtures. It has been more or less assumed that noise is necessary, though everyone knows how much more satisfactory noiseless functioning of equipment would be. Nothing is more annoying than the noisy discharge of toilet fixtures at inopportune moments. The scientist understands something of the causes which produce noise and should be able to design fixtures in which it could be reduced to a minimum. In many other lines, research should be able to lift the industry out of a rut, and carry progress forward into new and perhaps unexpected quarters.

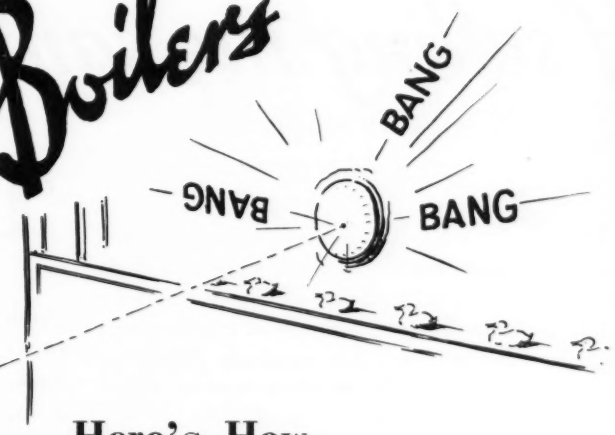
"Plumbing research should consider not only the problems of design and construction; it should also consider such problems as marketing. In the recent conference at the Massachusetts Institute of Technology, Professor W. E. Freeland, in an address on this subject, sketched broadly the almost unexplored field for research looking toward the promotion of sales in plumbing. He pointed out many ways in which a progressive plumbing contractor could both increase his sales and also become a more important individual in his community. He indicated both the necessity for and the possibilities of research in marketing and in methods of dealing with clients.

"Another field in which research could render valuable assistance but which will only be mentioned in passing, is in regard to the artistic element in the design and arrangement of plumbing fixtures and group layouts. Much could be done to improve the appearance and to make more attractive both the fixtures themselves and the arrangements of bath rooms, kitchens and other fixture groups. This, however, is a field where the artist and architect, rather than the engineering expert, should be employed.

"Finally, a research laboratory would be of considerable benefit in settling the controversies which arise from time to time between plumbing inspectors and plumbing contractors. Such a laboratory would furnish a means for determining the facts in any such controversy, so that decisions could be based upon fact instead of upon opinion as is too frequently done at the present time on account of the meagerness of available data. It would be a laboratory in which the manufacturer's and the individual plumber's problems could be worked out also.

"The Institute has had an opportunity, while carrying on conferences for master plumbers for the past three years to become familiar with the problems confronting the plumbing trade and it is impressed with the desirability of carrying on research in cooperation with this industry. It believes that much

Knock 'Em Down With Burnham Boilers



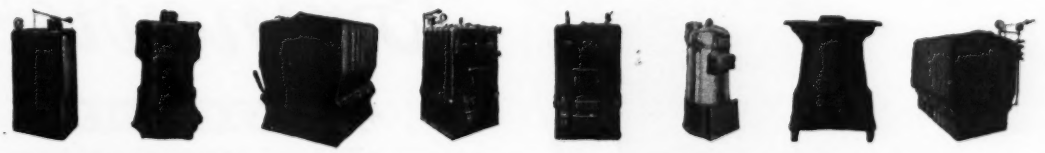
Here's How To Ring the Gong With Every Shot

THERE are just so many possible boiler sales in any community. To get your share in yours, you must get pretty close to ten hits in every ten you try for.

Burnham Boilers are tested ammunition. Not a dud in the line. With the full Burnham line to draw on, you can pot shot every job that bobs up, and expect to make a hit.

The Burnham list is yours for the asking.

THERE'S A BURNHAM BOILER FOR EVERY HEATING PURPOSE



Burnham Boiler Corporation

IRVINGTON, N. Y.

Representatives in all principal cities of the United States and Canada

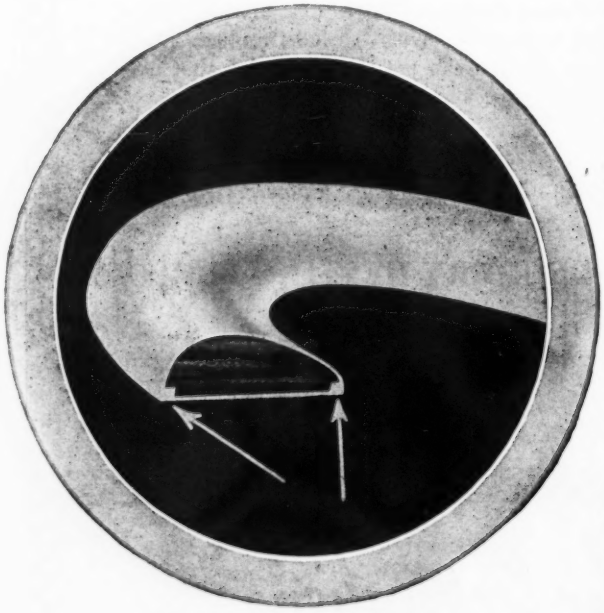
WHO PAYS YOUR COST *of selling the same seat* TWICE?

EVERY dealer who uses modern merchandising sales methods knows that the secret of their profit to him depends upon giving the articles merchandised a minimum amount of replacement service after they are sold. It is true in the plumbing business. It is true of the modern type of white, sheet-covered toilet seats.

Realizing this fact, we determined in bringing out a new seat of this type, to make it so strong that we could give it a lifetime guarantee.

The new Brunswick is such a seat, with pyralin 9 times thicker at the critical edges, and 800 percent stronger.

This patented feature which cushions and reinforces the edges, and which positively eliminates opening or cracking at the edges, appears in the cross-section as "Two Little White Squares."



IN this cross-section, just a glimpse of two little white squares. That's all you can see of the Brunswick patented 9-ply reinforcement feature. But it means tough, wear-resisting pyralin at the critical edges 9 times thicker, 800 percent stronger!

Patented, ingenious, offering an important advantage easily demonstrated by means of the handy cross-section (see diagram) and quickly appreciated by customers, the "Two Little White Squares" not only make this new Brunswick Seat easy to sell, but also are a guarantee that your profit, once made, is yours to keep.

Send for free sample
Cross-section and catalog

The moment you standardize on Brunswick White, sheet-covered seats, you can stop worrying about the profit of your toilet seat business.

Without obligation we will send you a catalog of our complete line of white sheet and colored sheet seats, and also a cross-section showing the "Two Little White Squares." Simply use coupon below.

THE BRUNSWICK-BALKE-COLLENDER CO. Chicago

Atlanta	Chicago	Detroit	Memphis	New York	Seattle
Birmingham	Cincinnati	El Paso	Minneapolis	Philadelphia	St. Louis
Boston	Cleveland	Harrisburg	Nashville	Pittsburgh	Tampa
Buffalo	Dallas	Houston	Newark	Richmond	Washington
Charlotte	Denver	Kansas City	New Haven	San Antonio	Montreal
Chattanooga	Des Moines	Los Angeles	New Orleans	San Francisco	Ottawa
		Toronto		Havana	

Brunswick

WHITE SEATS

WITH 9-PLY REINFORCED EDGES

Dept. **F-7,** Seat Division,
The Brunswick-Balke-Collender Co.,
623 South Wabash Ave., Chicago.

Send your complete catalog of Brunswick Seats, together with free sample cross-section of the Brunswick white, sheet-covered seat.

Name .....

Address .....

City ..... *State* .....

benefit will result from the establishment of a plumbing research laboratory, and plans are being considered at the present time, looking toward the establishment of a laboratory for co-operative plumbing research. It is hoped that in the near future plans will have sufficiently matured so that a definite announcement of them may be made."

Professor Tyler's second article, under the title "A Laboratory for Co-operative Plumbing Research at Massachusetts Institute of Technology, is as follows:

"We have discussed the part that research could play in the development of plumbing methods and practice, and the present article is to announce that an agreement has been reached between the Massachusetts Institute of Technology and the Massachusetts State Association of Master Plumbers under which some of the problems that are of interest to the association will be studied during the coming year. The actual work of installing the necessary equipment, pipes, drains and plumbing fixtures will be begun in September and work on the problems under investigation will start shortly thereafter. The laboratory will be under the writer's direction, and the association has appointed a research committee to cooperate with him and to select and submit such problems as it feels to be of such general interest to the trade that their solution will be desirable.

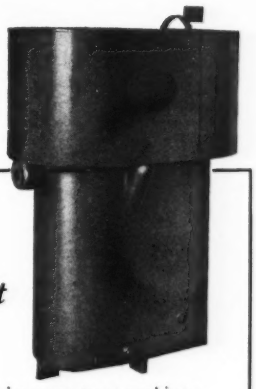
"The facilities of the laboratory will be available under the following conditions: All problems submitted by the research committee of the association and agreed to by the institute will be given preference, as this is one of the chief objectives of the laboratory. The institute will itself carry on such studies as it believes will give information of value to the trade and help in improving practice or in developing new methods and materials.

"Manufacturers desiring to take advantage of these facilities on problems relating to their products may do so by defraying the cost of the tests and investigations desired. Individuals may have investigations carried out on this same basis or they may present their problems to the research committee of the association. If the problem is of sufficient general interest, the committee can submit it to the institute for study if it so desires.

"The research committee has submitted certain problems as those for which a solution is most pressing at the present time. As soon as the laboratory is equipped, studies will be begun upon these. They include the investigation of certain matters pertaining to safety devices, non-siphon traps, the behavior of certain types of closets, and the relative merits of closed and open systems for hot-water heating. These and some of the problems suggested in last month's article will be the subject for study for the first year.

"Any investigation to be undertaken under the cooperative agreement between the association and the institute must be taken up through the research committee. Those members of the association having problems of general interest to the trade which they desire to have investigated should take the matter up with the committee, either through Richard T. Thatcher, president of the association, or Wallace T. Wordell, executive secretary. Only such problems as manufacturers and individuals wish to have carried out for their own private interests are to be taken up directly with the writer.

"It is believed that this cooperative agreement marks



The answer *for those who want the best softener*

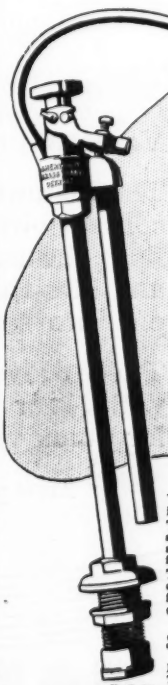
To those fastidious customers who come to you asking for a softener that will at once free them from the burden of mechanical details, and will furnish an unlimited supply of zero soft water, you cannot give a better answer than the Crane-Warlo Electromatic.

Everywhere it has been accepted as the most perfect of automatic softeners. It is made in one casting of grey iron . . . a metal whose corrosion resisting power is many times that of steel. Its softening element is Doucil C. W. 40, an exclusive Crane-Warlo mineral that is smashing all capacity records in industrial plants. Regeneration is automatic, and a special flag signals whenever the brine tank needs refilling.

Best of all, the Electromatic is so easy to install. Let us send you complete information concerning it.

CRANE

GENERAL OFFICES: CRANE BUILDING, 836 S. MICHIGAN AVENUE, CHICAGO
NEW YORK OFFICE: 23 W. 44TH STREET
Branches and Sales Offices in One Hundred and Eighty Cities



At a Price Consistent With High Quality Materials and Workmanship

You know that wherever there's a difference in quality, there is also a difference in price.

That's the way it is with Sherwood Ball Cocks—they are sold at a price that is consistent with the high quality materials and workmanship that go into them. But that price is only a few cents more than the price of the ordinary ball cock.

The Sherwood will close against any city water pressure without whistling or gurgling, and it will give trouble-free service for years.

Give Sherwood a trial for the utmost in customer satisfaction.

Sherwood Brass Works Jefferson & Mt. Elliott Avenues, Detroit, Michigan

Representatives: J. A. Riordan Co., Inc., 1600 E. 7th St., Los Angeles; 303 Colman Bldg., Seattle; E. S. Thompson, 2401 Chestnut St., Philadelphia; Fred G. Hoffman, 831 Edgewood Ave., Trenton, N. J.; Fred S. Wilsey, Plymouth Bldg., Minneapolis.

SHERWOOD Ball Cocks

CADWELL

No. 10 AIR VALVES

The operation of the Cadwell No. 10 Non-adjustable Air Valve is quick and efficient.

The instant steam comes in contact with the thermostatic float, the diaphragm expands and lifts the float and valve pin into seat, closing valve.

These valves are also made with 1/8" or 1/4" bottom outlets for quick vents.

Ask your jobber

FULLY GUARANTEED FOR FIVE YEARS

The BEATON & CADWELL MFG. CO.

Established 1894

NEW BRITAIN, CONN.

the beginning of a closer cooperation between the trade and the institute, and that it promises to be of real value to the trade if the whole-hearted co-operation which at present appears to be forthcoming shall be maintained. The laboratory will afford an added interest to the annual conferences at the institute, as it will be possible to demonstrate a number of the matters which have been dealt with in the discussion of previous years, while reports of the research carried on will be presented to the association upon suitable occasions or in papers before the institute conference."

We certainly feel that the foregoing outline of the co-operative plan between a state association and a great engineering institution marks a great forward step in the right direction.

It would not be at all surprising if the M. I. T. plan became the real solution of one of the weakest points the short course has showed. It would be a fine thing if other engineering institutions engaged in this work were to adopt a similar plan. We can even visualize a co-operative plan between such institutions which would have for its object the saving of duplication.

Running Water on the Farm

(Continued from Page 52)

essary to place the pump on the ground level and use a frost proof drop length. The former should be protected from the weather by a small pump house.

Some means must be provided to replenish the air in the pressure tank as water has the characteristic of absorbing air and occasionally may escape through leaks in the system. This may be accomplished by means of an air pump, Figs. 1 and 2, a hydro-pneumatic cylinder, or in the case of a shallow well pump, an air snifter valve, Fig. 4. If no provision is made to replenish the air in the tank it becomes what is known as water-logged and thus seriously reduces the working capacity of the tank.

When the system is started for the first time, water is pumped in the bottom of the tank, thus trapping and compressing the air contained in the tank. If an automatic switch is used, Figs. 1 and 2, it will stop the motor at a pressure of forty pounds and the tank will be two-thirds full of water as shown by the water gauge. It is possible to elevate the water 2½ ft. for each pound of pressure. The automatic switch is set to start the pump again at twenty pounds pressure. At this time the tank is about one-third full of water. For this reason the working capacity is only one-third of the total capacity of the tank. It is possible to either pump air into the system or by-pass it as is needed. Ordinarily, it is not necessary to supply additional air more than once from one to three months.

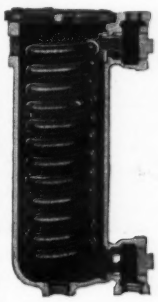
An air dome, Figs. 1 and 2, is used to relieve excessive strain on the pump, motor, automatic switch and also give smoother operation. In one case where there were seven ells and only one one-inch pipe between the pressure tank and pump, the motor started as many as three times on each upstroke. By placing a seven gallon air dome in the system, this condition was corrected and smooth operation secured.

A safety or relief valve should be a part of the equipment used as shown in Figs. 1 and 2. It is merely a safety measure in case the automatic switch should

Original — Genuine

Sylphon Temperature Regulators, Pressure Regulators and Expansion Joints are in almost universal use, in thousands of buildings, in nearly all industrial plants, in great power plants, and in the homes of the people.

The Fulton Sylphon Company, Desk D Knoxville, Tenn., U. S. A.



B & G

Outside Type

WATER HEATER

for Steam or Vapor Heating Boilers
The only Indirect Heater having removable coils without disconnecting pipes.
Ask your Wholesaler or write us for details.

BELL & GOSSETT COMPANY
3000 Wallace St., Chicago, Ill.
2281 Scranton Road, Cleveland, Ohio
638 Caswell Block, Milwaukee, Wis.

Also manufacturers of "Unitem" Submerged Water Heaters

R. L. Deppmann Co., 511 Canfield Ave., Detroit, Mich.
E. McCloskey, 859 Paul Brown Bldg., St. Louis, Mo.
Haydn Myer, 2224 Comer Bldg. Birmingham, Ala.
M. M. Rivard, 601 Gumbel Bldg., Kansas City, Mo.
Bookhout & Law, 331 Madison Ave., N. Y. City, N. Y.
Vessey-Gilbert Co., 2401 Chestnut St., Philadelphia, Pa.
C. U. Martin, Rialto Bldg., San Francisco, Calif.
B. J. Mulcahy, 210 So. 10th St., Minneapolis, Minn.
John A. Lungstrum & Keely Bldg. Denver, Colo.

SPENCER
steam, vapor or hot water
HEATERS

With the Magazine Feed and sloping Gable-Grate.

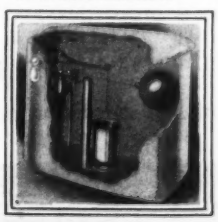
They save money for owners and make money for you.

Spencer Heater Company
Williamsport, Pa.

New York Boston Philadelphia
Buffalo Rochester Syracuse Albany
Baltimore Hartford Scranton

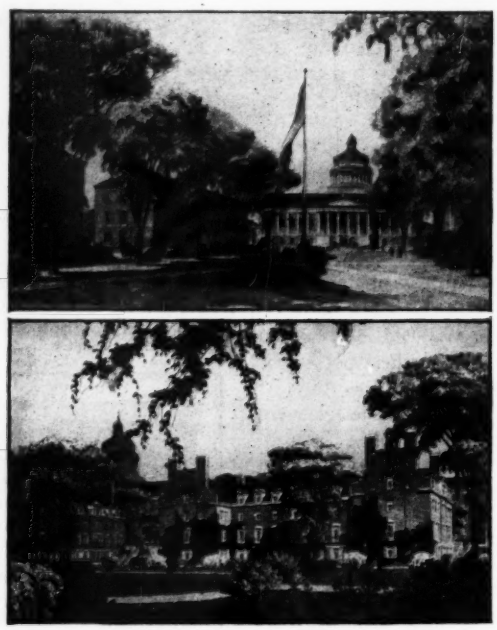
CURTIN
TANK *NOISELESS* FITTINGS

A·F·CURTIN VALVE CO.



Medford, Mass.

MEETING ARCHITECTURAL STANDARDS OF QUALITY

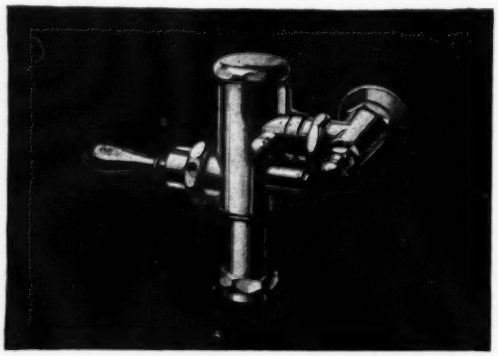


Main quadrangle and (below) dormitories of New College for Men, Oak Hill, Rochester, N. Y., showing buildings equipped with Solid Nickel Silver plumbing fixtures supplied by The John Douglas Company, Cincinnati, Ohio. Architects: Gordon & Kaelber, Rochester, N. Y.

UNIVERSITY OF ROCHESTER NEW COLLEGE FOR MEN

THESE MODERN BUILDINGS HAVE SOLID NICKEL SILVER PLUMBING FIXTURES BY DOUGLAS

The adoption of Solid Nickel Silver plumbing fixtures for the handsome new buildings of the University of Rochester suggests that every detail has been carefully specified so that this widely-watched building project may be in keeping with the highest architectural standards of today. Comparable in both beauty and physical properties to Pure Nickel and high alloys of Nickel, Solid Nickel Silver fixtures retain their lustrous, clean-looking appearance under severe use. They are corrosion-resisting and easily kept bright. Because of its hardness, toughness and strength, resembling tough bronze, Nickel Silver increases the wear-resistance of valve seats, and produces fixtures which are not easily marred or broken during installation or use. Solid Nickel Silver fixtures are being specified for both large and small installations where beauty, endurance and practical wearing qualities are of prime importance.



18% 22 Nickel SILVER

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

not function. It is usually set at about seventy-five pounds and will relieve the pressure by allowing the water to escape should it go that high.

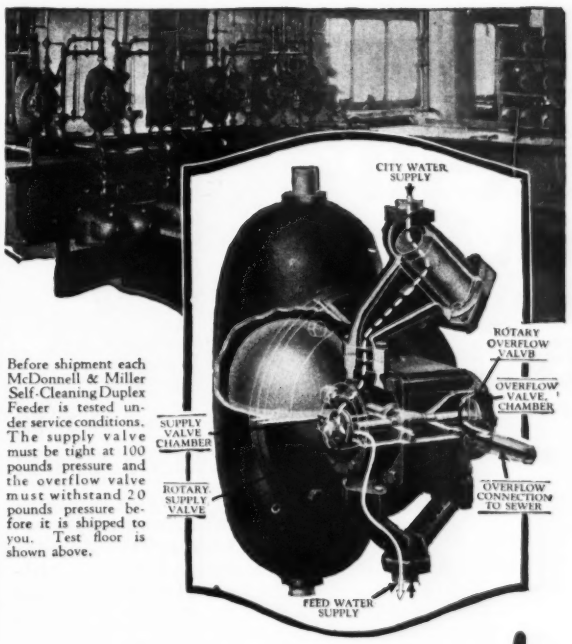
The main pipe line between the pump and hydro-pneumatic tank should be as short and straight as possible. If the distance does not exceed fifteen feet and the capacity is under three hundred gallons per hour, a one-inch pipe will suffice. A one and one-quarter-inch pipe or larger should be used for distances up to fifty feet. This pipe should be large enough so that the loss of head in pounds of pressure does not exceed one-half pound. Where the distance between the pump and basement of the house exceeds 50 ft., it is better to increase the size of the pit and place the pressure tank in it rather than putting it in the basement. Ordinarily, one-inch water mains, extending from the pressure tank to the barn, other buildings, and watering troughs, are large enough.

Leaky joints may be prevented by coating the threads with white lead or a paste made of linseed oil and graphite. Paste should be used on pipe threads only and not on the inside of couplings, unions, valves, etc. A liberal use of unions and shut off valves facilitates repairs and necessary changes.

Some people are inclined to believe that the water from a hydro-pneumatic tank is not desirable for drinking purposes. Where the small size tank is used with an automatic switch this is not true usually. If a fresh water faucet is desired, it can be installed at an additional cost of a swing check valve, tee and necessary one-half inch pipe as shown in Fig. 2. A hole, one thirty-second of an inch in diameter should be drilled through the check gate or a small slot cut with a file in the seat of the valve. In case of small leaks, water coming from the pressure through this hole will maintain the pressure on the automatic switch and prevent the motor from starting at short intervals. It is very important that this tee connection as well as any other branches be turned downward when leaving the main pipe. If they are not, the air will escape in these pipe lines instead of going into the pressure tank whenever air is supplied by the air pump.

The gravity tank for the barn as shown in Fig. 3 is to be placed in the hay mow. It is best to remove the floor boards and set the tank on the joists. The tank is to be supplied with a cover and then boxed in. This being covered with hay and the animal heat in the barn will keep the water from freezing during the winter months. A wooden tank is best as it will not sweat or rust. If a metal tank is used, a sweat pan should be provided. An overflow emptying into a watering tank or outdoors is desirable. At least two gate valves are necessary in the barn. Gate valve "A," Fig. 3, is opened to fill the gravity tank. The gate valve underneath the tank is kept open. It is closed if the tank should spring a leak, or in the summer time when the water would become stale because the cattle get their water in the pasture. Only under those circumstances are the drinking cups fed directly from the hydro-pneumatic tank.

Placing the pumping unit in a pit helps to make the system more sanitary and adds to the attractiveness of the farmyard. By placing the top of the pit several inches above the ground it helps to exclude surface water. A well pit, 4 ft. by 6 ft. and 7 ft. deep is most practical.



Before shipment each McDonnell & Miller Self-Cleaning Duplex Feeder is tested under service conditions. The supply valve must be tight at 100 pounds pressure and the overflow valve must withstand 20 pounds pressure before it is shipped to you. Test floor is shown above.

No tolerance!

A duplex-feeder is installed for just one purpose—to keep the boiler water line where it belongs under all conditions *always*. Other devices are satisfactory if they work right *most* of the time. But a duplex-feeder would be a failure if it failed *once!*

It is this simple fact that led to the long experiment and intensive research which has resulted in revolutionizing the Duplex-Feeder. The new McDonnell & Miller Self-Cleaning Duplex Feeder is built to work right under *any* conceivable condition of feed water and to have ample capacity to supply the entire requirements of any heating boiler.

The valves in this advanced feeder are self-grinding and self-cleaning—they *stay new*. Hard water is, therefore, no longer a hazard. Parts are fewer and more finely made. They oscillate instead of slide. Where there are no sliding parts, there can be no sticking parts. Characteristic of the care given to every manufacturing operation is the final test of each feeder as illustrated above. Throughout, the McDonnell & Miller Self-Cleaning Feeder is a "no tolerance" feeder.

New booklet for the asking

You will be interested in the advanced construction and ingenious design of this new feeder as clearly described and illustrated in the new booklet. Use the coupon to request your copy.

McDONNELL & MILLER
SELF-CLEANING
Duplex Feeder
"Doing one thing well"

McDONNELL & MILLER
400 North Michigan Ave., Chicago

Please send a copy of your new booklet to

Name .....

Address .....

Business .....

An Important Item On Any Heating Boiler

DAMPER REGULATOR

Proper combustion, uniform heat, care-free operation—all hinge on the automatic control of draft and check dampers.

METAPHRAM DAMPER REGULATORS are as fast as a gauge. The change of any condition that affects boiler pressure or temperature, whether in the firebox or in the system, reacts immediately into gradual, controlled draft regulation.

METAPHRAM DAMPER REGULATORS are made to fit *all* domestic heating boilers—hot water, low pressure steam, vapor or vacuum; and they are a profitable item to the contractor for replacement of less efficient devices.

Detailed descriptive bulletins will be mailed on request.

NATIONAL

NATIONAL REGULATOR CO.
2317 Knox Ave. Chicago, Ill.

National Systems of Heat Regulation and Humidity Control, Metaphram Dampers, Metaphram Motors, Industrial Thermostatic Devices, A-Jacks Steam Damper Regulator for high pressure boilers, Metaphram Damper Regulators for domestic steam, vapor, vacuum and hot water heating boilers, Metaphram Furnace Regulators.

NATIONAL REGULATOR CO., 2317 Knox Ave., Chicago
Please send us
☐Bulletin F-100—Type F Metaphram Damper Regulator for hot water boilers.
☐Bulletin LP-100—Metaphram Damper Regulators for low pressure boilers.

Name.....
Address.....
Town..... State.....

Square or round pits, 5 ft. square or 5 ft. in diameter will do. A larger size pit is necessary if the pressure tank is to be placed in it also.

Stone laid in cement mortar or solid concrete may be used for constructing the walls. A four inch concrete floor is desirable. A vertical drain as shown in Fig. 1 may be used to keep the pit dry where the soil is porous and well drained. In heavy clay soils, it may be necessary to use a line of tile to a surface outlet. If neither of these methods can be used, it becomes necessary to cover the outer face of the wall with a layer of pitch. Such a layer must also be placed in the floor when it is built.

Provision should be made for an opening and cover directly above the well casing as shown in Fig. 1. This will enable one to remove the drop pipe, sucker rod, etc., should it become necessary.

The large manhole should be big enough to allow the pump unit to pass through it. This also holds true of the pressure tank, if it is placed in the pit. A 2-inch shoulder is placed along the edge of the manhole to prevent surface water from entering the pit. A cover may be made out of reinforced concrete, Fig. 1, or of planks covered with tin as shown in Fig. 4. The latter is to be preferred as it is lighter and thus easier to handle. Each should be equipped with an eye-bolt and ring.

Besides the concrete pump mounting as shown in Figs. 1 and 4, a wooden platform is proving very satisfactory. The weight of the pumping unit will hold it in place. It is easier to install than a concrete base and adapts itself better to any future changes.

Shallow well pumps, Fig. 4, can be used where the depth to water does not exceed 22 ft. They also have the advantage of not having to be placed directly over the well but the unit may be placed in the basement of the house, in a pit or any other convenient place. It is easy to install as it is sold as a complete unit and only requires a pipe to the well or cistern and another to the faucets. If the unit is a considerable distance from the well, the lift should be reduced 1 ft. for each 50 ft. of distance. The purchasing cost is less than for deep well systems.

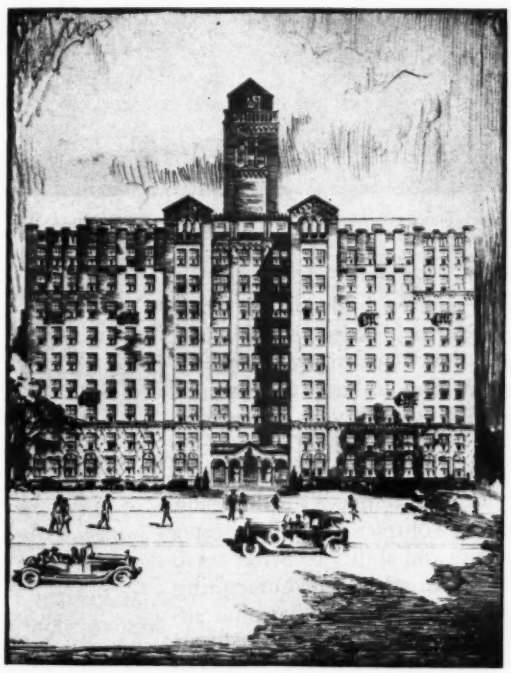
Most all electric shallow well systems are of the double acting reciprocating type. This is the piston and cylinder type and discharges and draws water on both strokes. All shallow well pumps should be supplied with an efficient foot valve. Centrifugal, turbine and rotary pumps are adapted to pumping large quantities of water.

Operating a water supply system with electric power is rather inexpensive. A Wisconsin farmer who pumps water for drinking, cooking, toilet flushing tanks, bath, 45 head of cattle, 7 horses and 600 chickens used an average of 20 kilowatt hours, costing 80 cents per month for 1928. He has a hydro-pneumatic system operated with a one-half horse power motor lifting the water 25 ft.

With the extension of electric service to so many remote sections providing the possibility of electric pumping of water, and with the many other forms of mechanical pumping which permits of satisfying almost every possible pumping condition it results in not a question of whether the rural inhabitant can afford to obtain his water by mechanical methods but whether he can afford to continue in the old fashioned methods.

One apartment house after another is T/N equipped

. . . *quiet flushing*
and distinctive appearance
boost sales in this profitable field



Shellball Apartments, Kew Gardens, Long Island
Architects, Seelig & Finkelstein Plumbing Contractor, Viebrock Plumbing Co.

NO matter where you look . . . Long Island . . . Kansas City . . . Atlanta . . . Los Angeles . . . you'll find one apartment house after another installed with the T/N. Owners and architects both favor it, because it offers them extremely *quiet* flushing and distinctive looks at a price that comes well within their budget.

If you've never installed a T/N, try it on your next job, whether it's a private residence, church or school, apartment or office building. You'll be strong for it then, because it is so easy to install. Only 2 connections, and an unusually favorable roughing minimum of only 12".

In small bathrooms or washrooms it saves space—can be installed in a corner or under a window. There is no wall-tank to prevent.

The T/N is non-overflowing, yet powerful in its flushing action. Mechanism is simple. And the T/N carries an attractive spread of profit for you. Write now for complete information and the name of your nearest jobber.

ONE PIECE WATER CLOSET SILENT NON OVERFLOW
Patented, Pat. Pend.

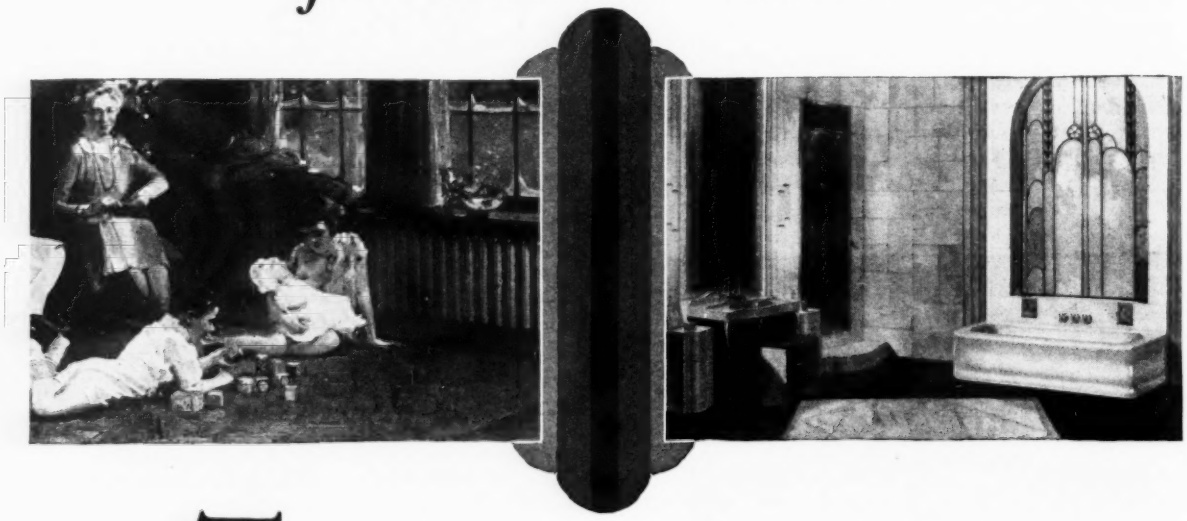
W. A. CASE & SON MFG. CO.
Established 1853
Dept. 509, 220 Delaware Ave., Buffalo, N. Y.

T/N

ONE PIECE
WATER CLOSET

Shoulder to Shoulder

for Greater Service



THE rise in the American Standard of living comfort—that miraculous change in one generation from the Saturday night washtub bath and parlor coal stove to the modern bathroom and radiator heating plant—is the result of the combined efforts of the Plumbing and Heating manufacturers, wholesale distributors and contractors. Together they have brought to the American Home a standard of living comfort that is unequalled in any other country in the world.

Now, two great companies: The American Radiator Co. and The Standard Sanitary Mfg. Co.—both pioneers in this march of progress—have joined hands in an effort to carry the living comforts of the American Home to an even higher level. Their union leads to broader research and the development of higher standards of quality. The linking together of their resources and vast knowledge gained from long years of experience makes possible a more complete understanding of the needs of plumbing and heating contractors, and a greater opportunity and ability to better serve those needs. Combined manufacturing facilities, more effective national advertising, greater sales promotional efforts, and many conveniently located showrooms bring their services to a greater number of home-owners.

All of which means more business and greater prosperity for the members of the heating and plumbing profession.

AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

40 WEST 40TH STREET, NEW YORK

SHOWROOMS IN ALL PRINCIPAL CITIES

The Effect of House Construction on Heating Plant Requirements

(Continued from Page 67)

cases we will have the following number of B.t.u. for the various types:

For Type A—6 x 12,000 x 0.60 = 43,200 B.t.u. per hour.

For Type B—6 x 12,000 x 0.60 = 43,200 B.t.u. per hour.

For Type C—6 x 12,000 x 0.60 = 43,200 B.t.u. per hour.

Table 14—Gravity Water Heating System—Open type Pipe capacities in square feet of radiation

Pipe Size Ins.	Radiators			Risers		Mains	
	1st Floor	2nd Floor	3rd Floor	2nd Floor	3rd Floor	Long	Short
¾	40	55	70	60	90	.....	.....
1	60	85	120	110	140	.....	.....
1¼	100	130	160	170	200	.....	.....
1½	150	190	250	225	300	.....	200
2	250	300	400	450	600	200	450
2½	.....	.....	.....	600	900	450	700
3	.....	.....	.....	.....	.....	700	950
3½	.....	.....	.....	.....	.....	950	1300
4	.....	.....	.....	.....	.....	1300	2000
5	.....	.....	.....	.....	.....	2000	3000
6	.....	.....	.....	.....	.....	3000	4000

"The required grate area in square feet is now found by dividing the quantity of heat available from the fuel burned into the heat requirements, thus, the grate areas will be,

For Type A—190,000 ÷ 43,200 = 4.40 sq. ft.

For Type B—126,000 ÷ 43,200 = 2.92 sq. ft.

For Type C— 84,500 ÷ 43,200 = 1.96 sq. ft.

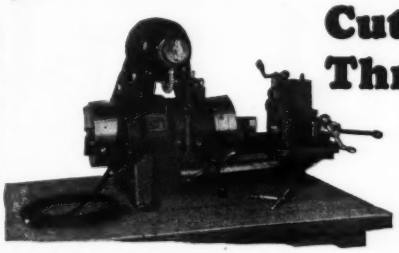
Comparing Yearly Fuel Requirements

"In all of the foregoing presentation, we have based our discussion on maximum demands for heating. Hence, comparisons of the areas of radiating surfaces required, sizes for the piping systems and grate areas of boilers apply only when the temperature outside is 0 degree fahr., and that inside is 70 degrees fahr.

"As an engineer, as well as a heating contractor, it is to your interest, in problems of this character to point out to your customer or prospective customer that the operating cost of the heating plant which he installs is a most important item. You should be able to make an estimate of yearly heating costs which will be very close to the actual. Here is the way you can do it:

"The total cost of heating a structure for a heating season, depends primarily upon prevailing temperatures for the particular locality and the temperatures to be maintained within the structure. Very close estimates of heating costs can be made, when complete data on fuel and weather conditions are at hand.

"Since enough heat for comfort is usually retained in a structure when the outside temperature averages



THREADS RAPIDLY

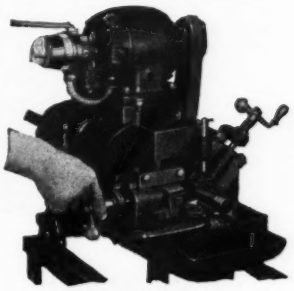
Cuts Pipe Threading Costs

A full-fledged Portable Pipe Machine for Reaming, Chamfering, Threading and Cutting Off pipe from ⅛" to 2".

Uses any standard make of solid square right or left hand pipe or bolt dies.

Weighs 250 pounds. Operates off either A. C. or D. C. lighting circuits. Is sufficiently powered to drive geared heads on the larger pipe, up to 6".

A real pipe machine at a price you can afford. Ask us about it today. Give us the name of your supply dealer.



CUTS OFF RAPIDLY

PEERLESS MACHINE CO. • **Racine, Wisconsin**

"CHICAGO"

Pipe Threading Machines Production Precision
Latest and Most Advanced Types on the Market

Chicago Pipethread Machine Co., Racine, Wisconsin

Offices and Factory: 1621 Racine Street

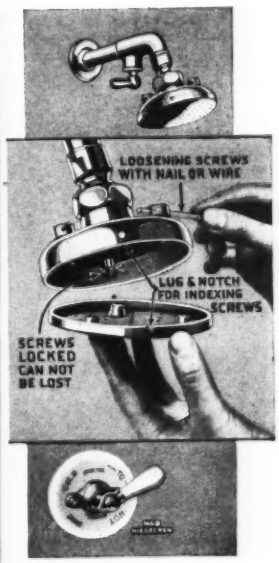
See How Easy It Is to Clean NIEDECKEN SHOWER HEAD

This is one of the big reasons why you ought to install NIEDECKEN SHOWERS only. All Niedecken Showers are equipped with this Niedecken Shower Head.

The face of the shower head can be removed for thorough cleaning by merely loosening three screws. A patented lug and notch act as index for replacing the face of the shower head in proper alignment, making it as accurate and secure as when first assembled.

Write now for Bulletin of complete details and other similar NIEDECKEN advantages.

HOFFMANN & BILLINGS MFG. CO.
Milwaukee, Wisconsin



NIEDECKEN SHOWER STALL
SHOWER HEAD
MIXER

Bath and Lavatory Fixtures Complete

NIEDECKEN SHOWERS

Truly Malleable

Kennedy Malleable Iron Pipe Fittings are so truly malleable that they may be crushed almost flat without splitting.

YOU can pull up to a tight joint on Kennedy Malleable Iron Pipe Fittings without danger of splitting or cracking at the threads or in the body. They are made truly malleable by heating in annealing ovens for an ample length of time to assure complete annealing through and through each fitting.

Thorough malleability is but one of your many assurances of uniformly good fittings when you use Kennedys. They are carefully inspected and tested before shipment to make sure that each lot is perfect in every respect—without flaws inside or outside, with clean, sharp, accurate threading and generous chamfer, and with uniform and heavy galvanizing.

Order Kennedy Malleable Iron Fittings from your dealer—either a few to inspect and test, or enough for your next job, and you will soon see why specifying "Kennedy" assures speedy and profitable piping jobs.

Facts

about Kennedy No. 3

Throughout the 52 years of Kennedy service to users of valves and pipe fittings, no Kennedy design has ever had to be recalled.

Send for the Kennedy Catalog

THE KENNEDY VALVE MFG. CO. ELMIRA, N.Y.

WAREHOUSES:
New York, 128-132 White Street; Chicago, 1335-1337 S. Clinton Street; San Francisco, 448-450 Tenth Street

SALES OFFICES:
New York, Philadelphia, Cleveland, Chicago, Atlanta, Salt Lake City, El Paso, Los Angeles, San Francisco, Seattle

Standardize on KENNEDY for ALL your Valves and Fittings

Standard Bronze Gate Valve
One of the large Kennedy line of bronze and iron gate, globe angle and check valve types for a wide range of pressures.

Radiator Valve
Built in both hot water and steam types and designed to follow the standard roughing-in dimensions formally endorsed by the Heating and Piping Contractors' Assn.

The Comment Corner

"With Kennedy's, no more leaks from fittings due to splitting under wrench pressure."

"We find your fittings perfect and easy to enter or connect, with good tapping. Machine work is all that can be desired."

—two typical comments from enthusiastic users of Kennedy Malleable Iron Pipe Fittings.

KENNEDY

VALVES-PIPE FITTINGS-FIRE HYDRANTS

60 degrees fahr. for the day, artificial heat is needed only when the daily average falls below this temperature.

"The normal heating season is 225 days, if it is assumed that the structure, for which the foregoing figures were developed, is located where the average daily temperature is below 60 degrees fahr. between October 1 and May 13. Reference to Weather Bureau reports for the selected locality, for which these figures were prepared, shows the average temperature for this period to be 39.4 degrees fahr.

"Let it be assumed that a temperature of 70 degrees fahr. will be maintained inside the structure for 16 hours of the day and a temperature of 60 degrees fahr. for eight hours of the day.

"Then, on this basis, the following is true:

Number of hours during a heating season that the structure is maintained at 70 degrees fahr.:
225 (days) × 16 (hours per day) = 3606 hours.

Number hours maintained at 60 degrees fahr.:
225 (days) × 8 (hours per day) = 1800 hours.

Table 15—Equivalent valve areas

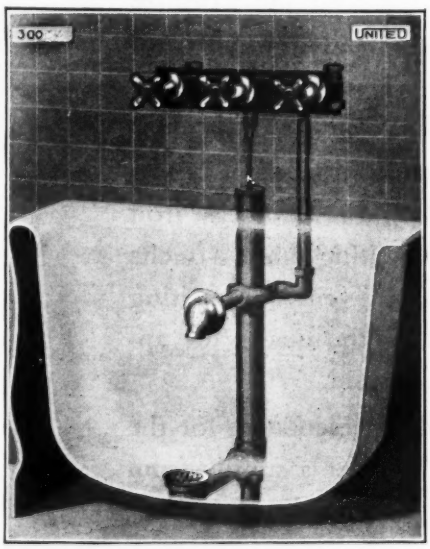
Valve or Circle Diam., Inches	Area Sq. Inches	Valve or Circle Diam., Inches	Area Sq. Inches
½	0.20	3	7.06
¾	0.44	3½	9.62
1	0.78	4	12.56
1¼	1.22	4½	15.90
1½	1.76	5	19.63
2	3.14	6	28.27
2½	4.90		

"The amount of heat required, being proportional to the difference in temperature between the inside and outside and the length of time this temperature difference exists, degree-hours are used for estimating heat requirements. This term, degree-hours, is merely a number obtained by multiplying the difference between the inside and outside temperature in degrees Fahrenheit by the number of hours heat is required.

"For the above assumed conditions, the following obtains:

Temperature difference for 16 hours =
70 degrees (average inside)—39.4 degrees (average outside) = 30.6 degrees fahr.
Temperature difference for 8 hours =
60 degrees (average inside)—39.4 degrees (average outside) = 20.6 degrees fahr.
Degree hours at 70 degrees =
30.6 (degree fahr.) × 3606 (hours) = 110,344 degree-hours.
Degree hours at 60 degrees =
20.6 (degrees fahr.) × 1800 (hours) = 37,080 degree-hours.
Total degree-hours for season = 147,424 degree-hours.

"This value may be used to develop the total heat loss for the season which will be the product of degree-hours times the hourly B.t.u. loss for a building per degree difference in temperature between the inside and outside. The number thus obtained represents the total quantity of heat that must be re-



No. 300 with All Brass Trimmings UN-I-CHROME Plated. Can also be furnished with China Trimmings.

Our Fully UN-I-CHROME Plated Fixtures will Eliminate Continual Polishing. They Are ALWAYS Bright, Dependable, Attractive and of "Enduring Quality."

Get price from your jobber

DEMAND

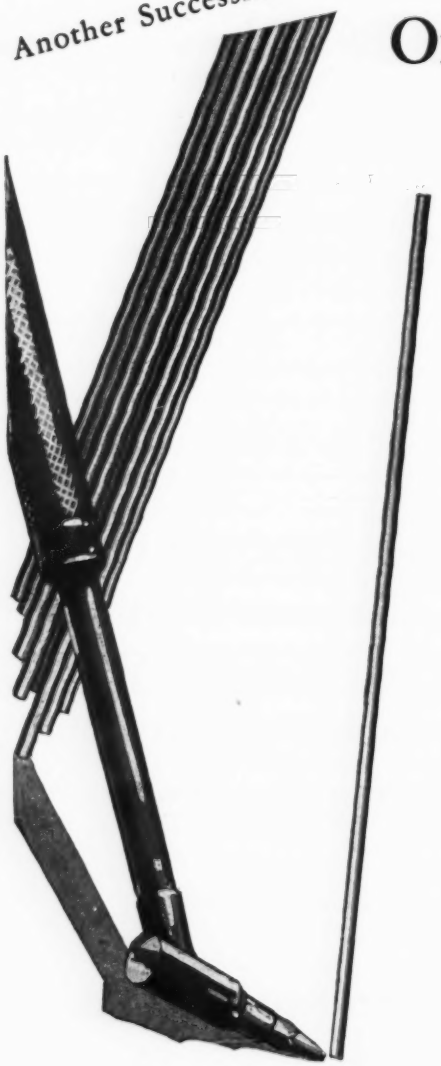
UNITED

TRADE MARK REG. IN U. S. PAT. OFFICE

UNITED-OBERNDORF CORP., CLEVELAND, OHIO

Introducing

Another Successful Union Carbide and Carbon Research Laboratories Development



Oxweld No. 21 High Strength Bronze Welding Rod

SUPERIOR for all bronze-welding operations — equally adaptable for steel, cast iron or copper alloys — produces a sound, fine-grained weld metal of superior qualities of strength, toughness, ductility and freedom from porosity.

Oxweld No. 21 High Strength Bronze Welding Rod requires less time to apply and less oxygen and acetylene. It makes high strength bronze welds easier and cheaper.

This new rod is easily worked. It can be more rapidly tinned on a steel or cast iron surface. It has a low melting point — melts and freezes quickly and evenly. Remelting has no effect on either the quality or appearance of the finish weld.

Ask any Oxweld representative for the whole story. Or, just order a supply from the nearest Oxweld warehouse.

OXWELD

WELDING AND CUTTING APPARATUS AND SUPPLIES

OXWELD ACETYLENE COMPANY

Unit of Union Carbide and Carbon Corporation

NEW YORK — Carbide and Carbon Bldg.

UCC

CHICAGO — Carbide and Carbon Bldg.

SAN FRANCISCO
Adam Grant Building

IN CANADA: Dominion Oxygen Company, Toronto

STOCKS IN 38 CITIES

placed by artificial means during an entire heating season.

"For the three types of construction under consideration, the B.t.u. per hour heat requirements, from Table 9, are, to repeat:

For Type A, 140,630 B.t.u. per hour.
For Type B, 93,124 B.t.u. per hour.
For Type C, 62,650 B.t.u. per hour.

"The degree-hours per degree in temperatures between the inside and outside for each of the three conditions under consideration will be, respectively,

Table 16—Average Rates of Combustion for Steam and Water Boilers (Safe increase 10%)

Furnace Size	Small	Medium	Large
Grate, square feet	6 or less	6–10	10 or over
Coal per hr., per sq. ft., pounds	5	5.7	6.6
Run on one firing, with 20% reserve, hours	8	7	6

For Type A—140,630 ÷ 70 = 2010.
For Type B— 93,124 ÷ 70 = 1310.
For Type C— 62,650 ÷ 70 = 895.

The total heat demands for the entire heating season for each type of construction will be:

Total Yearly Demand

For Type A—147,424 (degree-hours) × 2010 = 295,000,000 B.t.u.
For Type B—147,424 (degree-hours) × 1310 = 193,000,000 B.t.u.
For Type C—147,424 (degree-hours) × 895 = 132,000,000 B.t.u.

"Assuming the use of anthracite coal having a heat content of 12,000 B.t.u. per pound and average plant operating efficiency of 50 per cent for each of the plants considered (lower than the assumed boiler and grate efficiency used in determining grate area since average efficiency for the entire season must be used) the total coal required for the season may be estimated as follows:

"Pounds of Coal per Season = Yearly B.t.u. loss ÷ (B.t.u. per pound coal × per cent efficiency of plant).

For Type A, 295,000,000 ÷ (12,000 × 0.50) = 49,200 pounds.
For Type B, 193,000,000 ÷ (12,000 × 0.50) = 32,200 pounds.
For Type C, 132,000,000 ÷ (12,000 × 0.50) = 22,000 pounds.

"Converting the pounds of coal into tons of 2240 pounds, we get:

For Type A, 49,200 ÷ 2240 = 21.90 tons.
For Type B, 32,200 ÷ 2240 = 14.40 tons.
For Type C, 22,000 ÷ 2240 = 9.80 tons.

"Estimating on a cost of $15.00 per ton, the relative costs of heating per season for houses of equal volume but built as per Types A, B and C construction will be as given in the following table.

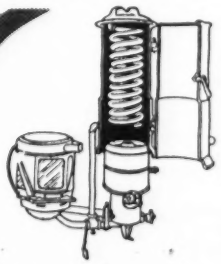
"Now, I've got just time to catch that next train and I haven't had time to get an order from you," remarked Mr. Sales Engineer, as he hurriedly

Installation of a Barber Automatic Jet Gas Burner means that the complete work of conversion has been done. The Barber is furnished complete for every type of boiler or furnace. Ask for Barber Specification Data Sheets. Write today.
THE CLEVELAND GAS BURNER & APPLIANCE CO.
3702-04 Superior Ave., Cleveland, Ohio
BARBER *Automatic* JET GAS BURNERS

Maddock's national advertising has created for the Master Plumber a real opportunity to compete for business in any price class with modern elongated closets.

□ □ □ □

THOS. MADDOCK'S SONS CO.
TRENTON, NEW JERSEY


Ask your Jobber or write us for full information about
OHIO *Kerosene* HEATERS
Ohio Kerosene Heaters have a reputation to live up to . . . . . And they always make good.
OHIO HEATER CO.
Columbus, Ohio, U. S. A.

Stop pipe thread leaks with SMOOTH-ON No. 1 in a
SMOOTH-ON CLAMP
Sizes for 1-in. to 12-in. pipe.

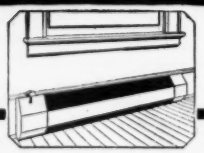
QUICK, easy, cheap. Holds for the life of the line—any pressure, any temperature, iron, brass, or copper pipe. Get Smooth-On Clamps and Smooth-On No. 1 from nearest supply house or from us.
Write for the free Smooth-On Handbook.
SMOOTH-ON MFG. CO.
Dept. 12, 574 Communipaw Ave., Jersey City, N. J.
SMOOTH-ON

. . . A NEW

of great importance to

E X P O S E D

Inconspicuous when attached to baseboard. A simple, inexpensive method of installation in new or old buildings.

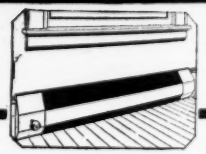


TESTS in the Frost Research Laboratory made in accordance with the radiator testing code of the American Society of Heating and Ventilating Engineers have established a B. T. U. rating in terms of cast iron radiation equivalent (240 B. T. U.) of 15 feet for the 36 inch section and 7 feet for the 18 inch section when placed end to end, single tier.

Richmond Floorline Radiators are regularly made of steel fins welded on iron tubing. Can be supplied in Brass or Copper on special orders. The shape of the fins and the spacing between them have been determined after exhaustive tests to give the utmost in heating efficiency. Fins are firmly attached to a solid metal plate backing radiator and also to the metal plate across the front. No possibility of leaking, breaking, or bending in any place.

SEMI-RECESSED

Cutting away the baseboard alone reduces the projection of the radiator from 3½ to 2 inches.



RICHMOND FLOORLINE RADIATORS are made in two lengths—18 and 36 inches. Radiators are close-coupled to make up required radiation. May extend along a straight length of wall, or make a right-angle turn. Heating efficiency of coupled radiators is maintained throughout any length not exceeding twenty-one feet with six ounce steam pressure.

When radiators are attached to baseboard or partially recessed, the small space between connected radiators is filled with a section furnished for that purpose so that the appearance of continuity is not broken. Valve connections and traps are encased for concealment.

"RICHMOND"
FLOORLINE

RADIATOR

every heating contractor

EFFICIENT
ADAPTABLE
INEXPENSIVE

A NEW radiator — a modern radiator with many unusual features. It allows three methods of installation—attached to baseboard—partially recessed —entirely recessed. It distributes heat more efficiently. Inexpensive to install in new homes or old.

Three different installations are shown in the photographs above, yet note how inconspicuous the radiator is in each. Only eight inches high, three and one-half inches deep.

Heat is projected at the floor level—where most needed and most efficient. Better distribution of warmth is further insured by the greater length of this low radiator. It ends cold corners and drafty floors.

The Richmond Floorline Radiator costs less than other types of concealed or compact radiators. The replacement of present cast iron radiators with this finer type often costs less than installing radiator shields.

Opens up a wonderful field for replacement installations in homes and buildings of every type. Only two sizes, therefore easy to stock for every job. Light weight, each radiator in a separate carton, low transportation cost. Operates on any two pipe steam, vapor, and vacuum system, and hot water heating plant of either forced or overhead circulation.

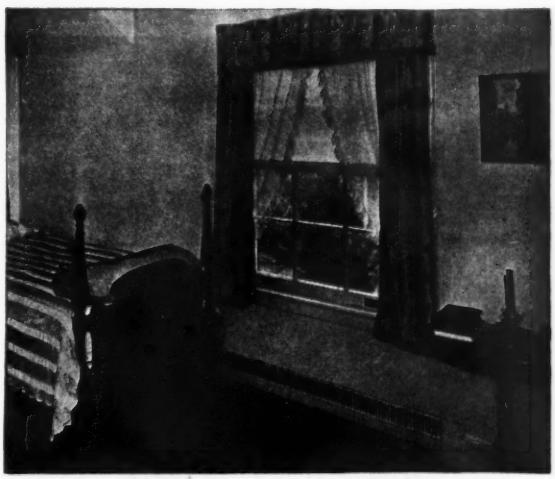
The story of this remarkable radiator is being told to hundreds of thousands of consumers through leading national publications.

The coupon below will bring an illustrated, descriptive booklet of the Richmond Floorline Radiator, and working drawings of various methods of installation for your files.

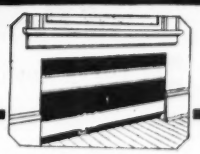
* * * *

More than 40 years experience in the manufacture of fine heating equipment is incorporated in the Floorline Radiator. Richmond Steam, Hot Water and Gas Fired Boilers, Cast Iron Radiators and Enamelled Ware are other products of the Richmond Radiator Company.

R E C E S S E D



The Floorline Radiator is easy to install in the space between the inner and outer walls.



RICHMOND RADIATOR COMPANY, Inc.
Dept. H. 9, 1480 Broadway, New York, N. Y.

You may send data on the Richmond Floorline Radiator.

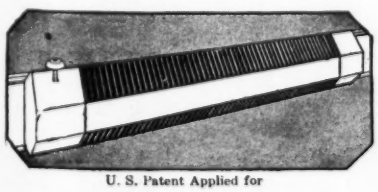
Name.....

Address.....

.....

In order that we may send the most helpful information, please check the space below that identifies you:

Heating Contractor ☐ Builder ☐ Architect ☐ Owner ☐



U. S. Patent Applied for

RADIATOR

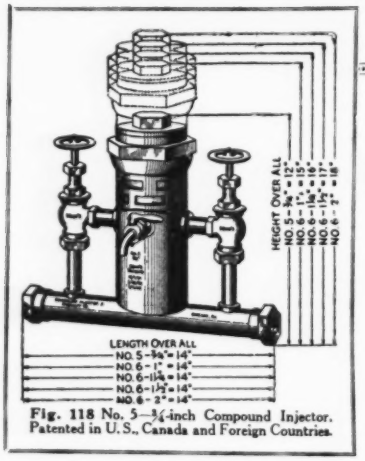


Fig. 118 No. 5—¾-inch Compound Injector. Patented in U.S., Canada and Foreign Countries.

Dehn Water is Free From All Sediment and Germs

It's merely a matter of good health to recommend the Dehn Automatic Water Softener to your customers.

And, to tell the Dehn story to them is to make sales—and profits that are permanent—never eaten into by service calls.

Get the full particulars from your jobber or from us direct—without obligation.

COMPOUND INJECTOR & SPECIALTY COMPANY
419-421 D. North Laramie Ave. - Chicago, Ill.

Originators, designers and sole manufacturers of

1897 DEHNSANIGARD 1929
THE QUALITY GOODS

THE

WATERID QUICK DRAIN

HAS THESE ADVANTAGES OVER CESSPOOLS

Full-size Opening Thru Body Takes Plunger

No Chopping Up of Cement to Unstop Line

Heavy Cover Will Stand 5-Ton Rumbling Load

Slip Lock Cover Not Easily Misplaced

Area of Slots Greater Than Area of Soil Pipe

Permanently Caulked to Sewer

Takes Up Less Floor Space Than Cesspool

Uses Up Tail Ends of Soil Pipe

Made to Take 2", 3", 4" and 5" Pipe
Made in Plain Iron, Galvanized or Brass

MADE BY

The RICHMOND Inc.
FOUNDRY & MANUFACTURING CO.

RICHMOND, VIRGINIA

"A DEPENDABLE SOURCE OF SUPPLY"

gathered up his papers to make a quick get-away to the railroad station.

"Don't worry on that score," said Mr. Heating Contractor, "I'm one who appreciates the time you've given me. My order and a good one in a sealed envelope for you will be at the home office when you return there next week. Good-bye, good luck, and be sure to come in on your next trip. So long."

Relative Costs of Heating per Season for the Different Types of Construction

Types of Construction	Tons Coal Required per Season (approx.)	Total Cost at $15.00 per ton	Differences in favor of Types B & C over Type A
A	22	$330.00	
B	14	210.00	$120.00
C	10	150.00	180.00

Enforcing Small-Town Plumbing Regulations

(Continued from Page 67)

his town is in a mess. And yet, there is this saving feature in the situation—regardless of the seeming difficulty that confronts the industry, it must be admitted that there is a strong desire in that community for high-class plumbing laws and their enforcement. Otherwise such laws would not have been passed in the first place, or the plumbing inspector appointed.

Public Consciousness Needs Arousing

If the consciousness that originally demanded an improvement in plumbing conditions can again be aroused,—this time to insist on the reinstatement of lawful conditions and practices that were once fought for and gained,—no doubt all would be well again. But just how one would go about it to gain this desired result, we are not able to advise. Apparently the lumber man is the cause of it. This, of course, is a wrong condition, often existing and hard to deal with, and due to the fact that the people are indifferent and asleep. Just how one would go about waking them up is not easy to say, but if they actually did wake up, they could bring back the right order of things.

Knowing what we do about municipal affairs, we would suggest that to counteract the wrong influence that seems to come from the lumber yard, an opposition influence should be created that will make itself heard.

A number of our states now have a state law which is particularly helpful in maintaining correct plumbing practice in small towns, but we do not understand that this particular state, Texas, has such laws. We hope that this particular instance may gain sufficient publicity to attract attention to this subject in general, for we have good reason to believe that there are many similar instances.

The demand that the plumber obtain from a qualified board, a license to show that he is qualified to carry on or to work at the trade is an excellent thing, but such a law may easily result unjustly.

We do not believe that such a law should be enacted today and put into full force tomorrow. Men who have

Haas

UNIVERSAL FLUSH VALVES

Meeting the demand for beauty in flushing apparatus has always been a leading urge in the manufacture of Haas Universal Flush Valves.

Haas Universal Flush Valves are always attractively finished, always fit into the color and architectural scheme of the bathroom.

But more than that, Haas Universal Flush Valves meet the first demand for efficiency, for long life and dependability in a manner that only Haas Flush Valves can.

You are always safe in specifying Haas Universal Flush Valves for beauty. You are doubly safe in installing them for real service.

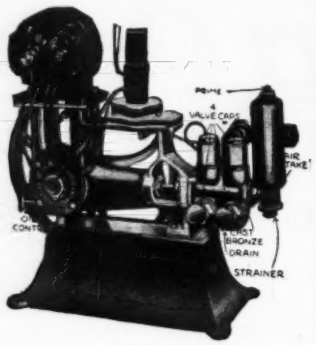
Your jobber can supply you with Haas Universal Flush Valves or, write us direct for full information.

The
PHILIP HAAS CO., Inc.

DAYTON, OHIO

THE Kalamazoo Guarantee protects you against all customer complaint for one year. Any defects in workmanship will be repaired free of charge during the guarantee period but you'll find that defects in a Kalamazoo are as rare as can be.

NATIONAL WATER LIFT CO.
Kalamazoo :: Mich.



7 in 1
EZ INSERT
The One Insert Suitable for Any Hanger

E-Z Insert is adaptable to all sizes of pipe hangers, whether supported by pipe, bolt, rod or band iron.

Adjustable—allowing for expansion and alignment of inserts. Ball and socket arrangement between insert and hanger. No coupling or turn buckles needed—the E-Z button turns in the insert.

Made in one size, and that one size will accommodate ¼-in., ⅜-in., ½-in. and ¾-in. rod and ¼-in., ⅜-in. and ½-in. pipe. Seven in one. Efficient — economical.

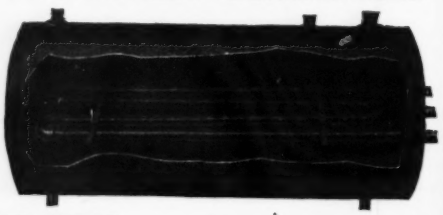
Write for prices and detailed information

HEALY-RUFF COMPANY
791 Hampden Ave. St. Paul, Minn.

Also Manufacturers of
E Z
RADIATOR HANGER

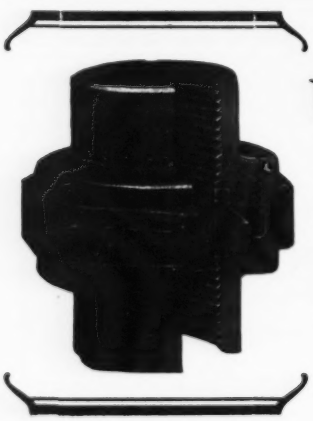
PNEUMATIC—STORAGE—SPECIAL
UNCONDITIONALLY GUARANTEED

STEEL TANKS



ARROW
TRADE MARK
Black or Galvanized

THE NOVELTY STEAM BOILER WORKS COMPANY
Clare and Kloman Streets Baltimore, Maryland



DART UNIONS

Every pipe line you equip with Dart Unions is insured against leaks at the point where pipe line leaks most frequently occur.

Two Bronze Seats in Dart Unions give this positive protection.

E. M. DART MFG. CO.
Providence, R. I.

The Fairbanks Company Sales Agents
Canadian Factory: Dart Union Co., Limited, Toronto

carried on the plumbing business for years should not be forced out of business or crippled in any way, due to the fact that they cannot instantly pass an examination which may or may not be a fair test. It is the easiest thing in the world to make up an examination which the applicant cannot pass, any more than his examiners can.

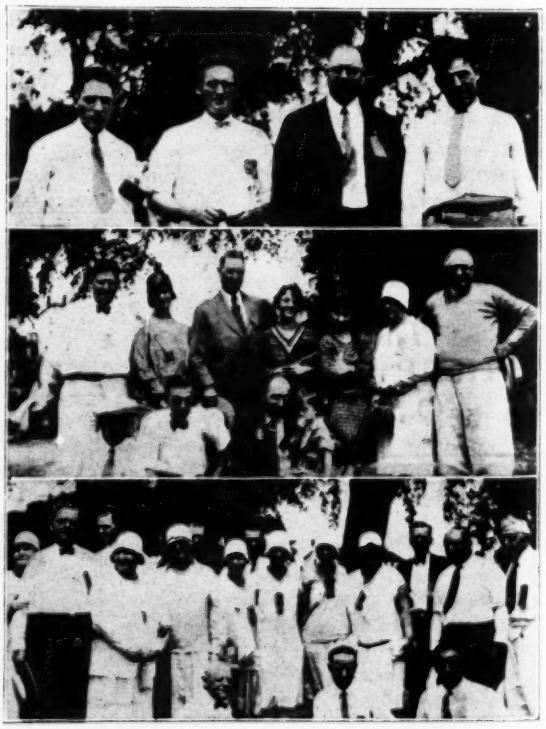
It is our firm conviction that when new plumbing laws are to be enforced, it should be seen to that those who are affected, should always be given every chance to meet the enforcement of those laws in a fair manner.

We know of instances where old-time plumbers, who had long since given up active work, but who were still in business,. were suddenly faced with the necessity of passing an examination. This was manifestly an unjust demand. However, at one stage in the development of plumbing laws, this situation often arose. In one or more of the states it is met by allowing a journeyman in the employ of the concern to hold the license on which the concern operates.

One Solution to Difficulty Is in Fighting for Better Conditions

Enactment of plumbing laws which are not enforced produces a worse condition than when there are no laws. For in the former case the conscientious man is the one who is at a disadvantage.

Apparently the entire plumbing situation in this town is in a bad way, and about the only advice we can give is to fight and fight hard for better conditions. This same fight has been carried on for years in many places, and nowadays more than ever before is winning out.



Top row: G. E. Clark, Julius Leins, Fred W. Koehler, president of District of Columbia association; John M. Beane. Middle picture: A group enjoying the outing. Bottom picture: The Baltimore delegation attending the outing of the Master Plumbers' Association of the District of Columbia, held at Chapel Point

Gone are the days of "ostrich ways"

in rating pump capacity

Published Ratings of Vacuum Heating Pumps

should be supported by guaranteed air and water capacity

That two different makes of vacuum heating pumps are rated for the same number of square feet of direct radiation does not establish that the two pumps will serve a heating system equally well. . . . To assume that they will, is "playing ostrich."

COMBINED air and water capacity, *determined by actual test,* and the horsepower required to attain this capacity is the only reliable basis to use for comparison. The published rating, in radiation surface alone, for a given pump is dependable only if the pump will deliver *simultaneously* a volume of air and water sufficient to handle that amount of radiation under all conditions.

For the thirteen years that Jennings Vacuum Heating Pumps have been on the market, Nash engineers have recognized these facts. Having determined from experience the volume of air and water that a pump must handle in order to serve a given radiation satisfactorily, they have rated Jennings equipment accordingly.

The ratings exhibited in the table are sufficient to serve any vacuum heating system, reasonably well installed, for the life of the building. Pumps of smaller capacity should not be considered.

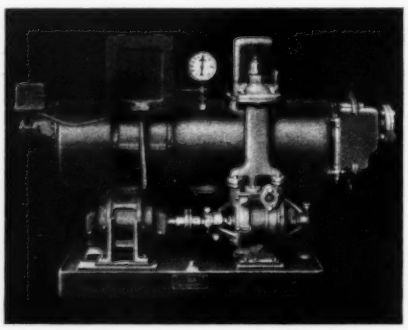
CAPACITIES OF JENNINGS VACUUM HEATING PUMPS

Pump Size	Equivalent Direct Radiation Square Feet	Water Capacity G.P.M.	Air Capacity Cu. Ft. Per Min.	Orifice Diameter Inches	MOTOR HORSEPOWER			
					10 Lbs.	20 Lbs.	30 Lbs.	40 Lbs.
T	2,500	4	3	1/64	1/6	1/6	1	1 1/2
U	5,000	9	3	1/64	1/6	1/6	1	1 1/2
V	10,000	14	6	1/64	1	1	1 1/2	2
B	16,000	22	9	3/64	1 1/2	2	3	5
C	26,000	35	15	1/16	2	3	5	5
D	40,000	60	19	5/64	3	5	5	7 1/2
E	65,000	90	34	3/32	5	5	7 1/2	10
F	100,000	140	50	1/8	7 1/2	10	15	15
*G	150,000	200	102	5/64 & 3/32	10	15	UPON REQUEST	
*H	300,000	400	171	2-7/64 & 1-3/64	UPON REQUEST			

* *The last two sizes are out of the manifold type.*

Jennings Ratings Affirmed By Test

Published Jennings Vacuum Heating Pump capacities are substantiated by actual test. Before shipment every Jennings Pump is tested at the factory. Working conditions are reproduced. The air and water capacities are



JENNINGS VACUUM HEATING PUMP

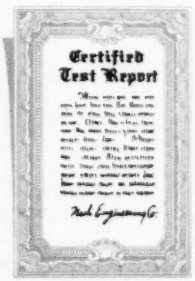
accurately determined. The horsepower is measured. Each pump is tested with its own motor and control equipment. Every part of the assembly must demonstrate that it is working perfectly.

A certified report of the results is furnished to the purchaser. The prospective user, his engineer, or any other person designated, may witness the test.

Water capacity is determined by measuring the volume in g.p.m. that the water impeller of the pump removes from the receiving tank under 10 in. vacuum and delivers against the specified discharge pressure at the pump. This volume of water must be delivered at the same time that the pump is handling its rated maximum quantity of air.

Calibrated Orifice to Measure Air Capacity

Air capacity is measured by means of a calibrated orifice of specified diameter, reamed in a brass plate one-eighth inch thick, located in the pump suction and communicating with the receiving tank. This orifice measures the cu. ft. per min. of air that the air rotor of the pump withdraws from the receiving tank and discharges to the atmosphere. Air capacity is determined at the same time that the pump is delivering its maximum rated volume of water.



CERTIFIED REPORT OF TEST

Compare vacuum heating pumps by combined maximum water and air capacity and by horsepower. Call for a certified factory test report, to be substantiated where convenient by a second test on the job.

STANDARD TEST ORIFICE

Jennings Pumps

NASH ENGINEERING CO.
SOUTH NORWALK CONN., U. S. A.

LEGAL QUESTIONNAIRE

ANSWERED BY "THE JUDGE"*

Has Contractor, Who Has Delivered Fixtures to Job, Right to Retake Them if Owner Refuses to Go on with the Contract?

Editor, "Domestic Engineering":—We have a case which has been up in the county court and would like to put it to you and your readers. Please write me as to what you think of a case like this.

I entered into an oral contract to do the plumbing and heating in a house for a man for $1,800. I presented a written contract to him for his signature. He never signed it, and just told me to go ahead with the job.

Under our agreement the owner was to pay one-half of the $1,800 when the job was roughed-in and the balance upon completion. I roughed the job in and the owner paid me only $300. I had delivered the radiators and boilers and also a bathtub to the job, but they were not set; they lay out in the yard.

The owner came to me and wanted some heat to work by. I told him that I could not tie up any more in the place until I got my money as per contract. The house is a duplex; one side is finished and people are living in it. I had finished that much before he asked for heat for the other side.

Well, the owner said that he would get somebody else to finish the job. I offered to move my radiators and bathtub away, but he refused to let me have them. I replevined the materials and took them.

The county judge says that I must return the goods or pay the value of them to the owner. The judge also gave the owner a judgment for $10.50 damages. The owner says that he has building rented and that I have set him back on completion of the building nine days.

In our agreement I had not said when I could furnish the heat or that I would furnish temporary heat at all. Please give me your opinion.

Nebraska. J. W. C.

Answer:—The court, in finding against you, must have found that a number of facts existed which you have not stated in your question.

Ordinarily, where goods are used in the installa-

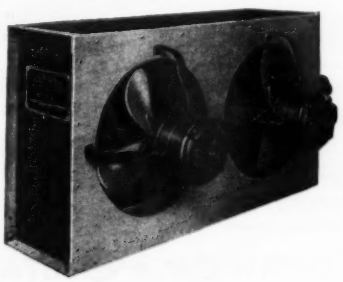
*Every effort is made to the end that these answers may be authoritative. However, we cannot assume any responsibility because of the very nature of the service, which is rendered without a personal interview.—Editor.

KROY
Unit Heater

INCREASED Unit heater capacity at surprisingly low B. T. U. cost is supplied by Kroy Unit Heater No. 221, as illustrated. The Super-Fin coil is tested to 1000 lbs. hydrostatic pressure and is recommended for steam at any pressure up to 200 lbs. The multiple fans operate singly or in combination, thus giving maximum flexibility of control.

Ratings, specifications and data on request. Local offices in important cities.

York Heating & Ventilating Corp'n
Largest Producers of Unit Heaters
1573 Sansom St., Philadelphia



Range Boilers

TANKS
for
Automatic
Heaters
To Your Specifications

COIL BOILERS
STORAGE TANKS
Pressure and Special
of All Descriptions

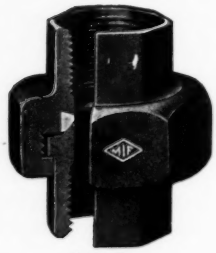
Riveted and Welded — Black and Galvanized

PENNSYLVANIA RANGE BOILER CO.
Main Office and Plant:
S. W. Cor. 24th and Washington Ave., Philadelphia

BRANFORD-UNIONS

They say that people judge you by
The company you keep.
Upon the kind of seed you plant
Depends the crop you reap.
If on good piping jobs you'd like
To build your reputation,
Use nothing else but Branford Unions
On each installation.

Branford Junior
250 Pounds



Branford
350 Pounds

MALLEABLE IRON FITTINGS CO.
MIF
BRANFORD CONNECTICUT

MECHANICAL O.K.+ INSPECTION O.K.+ FINISH O.K.=MIF STANDARD

tion of plumbing and heating work, it cannot be said that they have been delivered to the owner until they have been installed or connected with the real estate in some way. Whether fixtures have been delivered, under a contract, is a question of fact, in the first instance. That is, in your case, did your taking the radiators and bathtub to the premises and leaving them out in the yard, constitute a delivery to the owner under your contract? The court must have found that under all the circumstances of your case, including what you and the owner had said to each other, and what you did, that as a matter of law, the delivery of the fixtures on the premises was a delivery to the owner under your agreement with him.

In every case, involving the sale of goods, whether there has been a delivery, depends upon what the agreement of the parties was, and in the absence of a specific agreement, what the intentions of the parties were as evidenced by what they did.

It is hard to know, upon the meagre facts which you state, upon what grounds the court found that you had delivered the fixtures to the owner, to give him title to them. As the fixtures had not been attached to the real estate, in other words had not been installed, they remained personal property. The court must have found that you and the owner had some understanding, from what was said or done to the effect that the delivery of the fixtures to the owner's yard was a delivery to him under the contract; otherwise, in the replevin suit, the court could not have found that the owner was entitled to possession of them.

If you can prove the case which you have stated, there would seem to be no question but that you have a right of action against the owner for damages, for breach of contract. On the other hand, from the fact that the court found against you in the replevin case, I should imagine that you could not prove a breach of contract against the owner; but this does not necessarily follow.

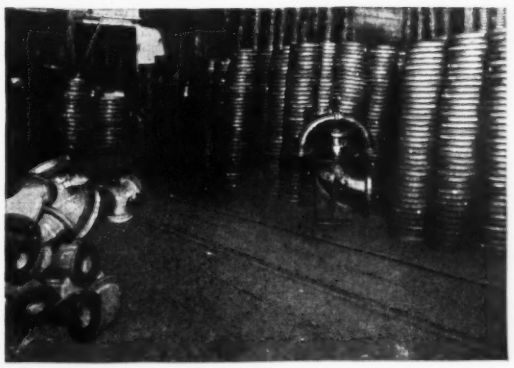
The case which you present in your question would seem to be so clearly in your favor, that you must have left out some very important fact which may not have seemed to you to be very important.

Does Mechanic's Lien Right Cover Work When Running Central Heat Service Line Outside Limits of Owner's Premises?

Editor, DOMESTIC ENGINEERING:—Can a plumbing contractor successfully file a lien in the State of Missouri, on a property, when the larger part of the work and materials furnished were done outside of the property line? In this case a central heat service line was connected 250 ft. from the owner's residence. About 225 ft. of this line were in the street and only 25 ft. were on the owner's land. No other work was done on the premises, except to attach to owner's heat pipe in the basement. The contract was for a lump sum, made with the husband, and the property is in the wife's name. The wife was at home and saw us and knew we were dong the work and made no objections.

Please cite cases tried, where a plumber took a lien

L.F.C. HIGHEST QUALITY



PROMPT SERVICE L.F.C.

THE ANSWER

To the Quick Delivery Service

THE above illustration pictures one corner of our stock room in which thousands of Standard and Extra Heavy Cast Iron Companion, Blind, and Reducing Flanges for 125 and 250-pound steam working pressure are stored—ready for immediate shipment.

"Lynchburg" service is a God-send to the engineer or contractor on a "time limit" job.

Write, Wire or Telephone Your Requirements

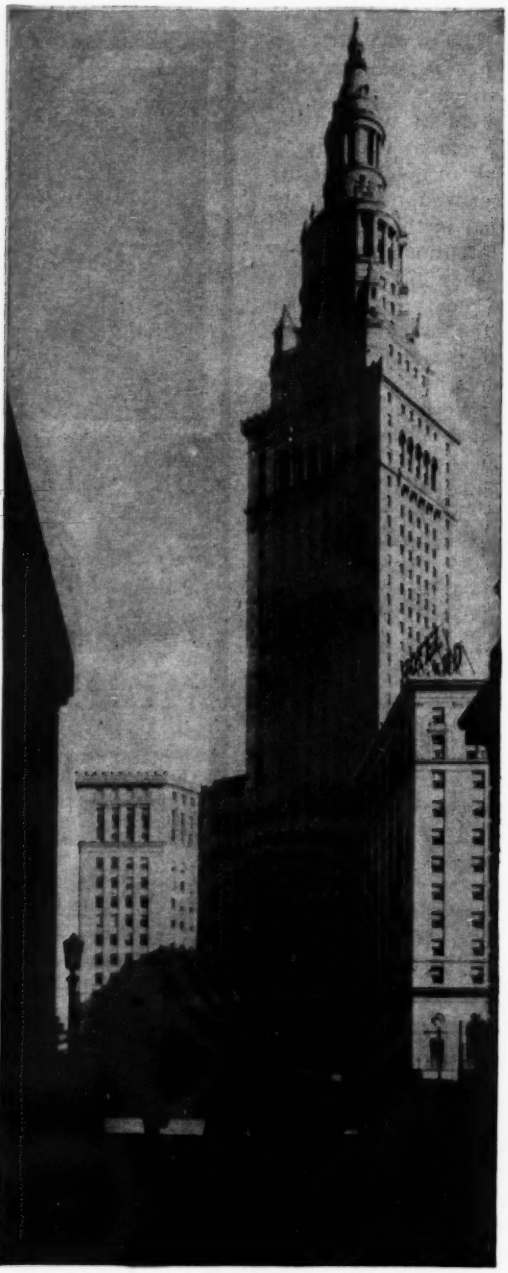
Lynchburg Foundry Co.

General Office
LYNCHBURG, VA.

Peoples Gas Bldg.
CHICAGO, ILL.

342 Madison Ave.
NEW YORK, N. Y.

PERMANENCE *plus* EASE *of* INSTALLATION



The Terminal Tower Building, Cleveland—another masterpiece piped with Youngstown Steel Pipe.

Architects:
GRAHAM, ANDERSON, PROBST & WHITE
General Contractors:
JOHN GILL & SON
Plumbing Contractors:
A. R. BRUGGEMAN CO.

YOUNGSTOWN steel pipe has two outstanding features which recommend it to plumbing and heating contractors—first, the permanence of a Youngstown installation; second, the ease with which Youngstown pipe is installed.

Every length of Youngstown pipe runs absolutely uniform in size; the threads are clean and deep-cut; it works with ease and speed and each length is carefully inspected and tested at the mill before shipment. This means the elimination of lost motion on the job—faster, easier installation.

THE YOUNGSTOWN SHEET AND TUBE COMPANY, *General Offices,* Youngstown, O.

One of the oldest manufacturers of copper-bearing steel, under the well-known and established trade name "Copperoid"

DISTRICT SALES OFFICES:

ATLANTA—Healey Bldg.
BOSTON—80 Federal St.
BUFFALO—Liberty Bank Bldg.
CHICAGO—Conway Bldg.
CINCINNATI—Union Trust Bldg.
CLEVELAND—Union Trust Bldg.
DALLAS—Magnolia Bldg.
DENVER—Continental Oil Bldg.
DETROIT—Fisher Bldg.
MINNEAPOLIS—Andrus Bldg.
KANSAS CITY, MO.—Commerce Bldg.
NEW ORLEANS—Hibernia Bldg.
NEW YORK—30 Church St.
PHILADELPHIA—Franklin Trust Bldg.
PITTSBURGH—Oliver Bldg.
SAN FRANCISCO—55 New Montgomery St.
SAVANNAH—M and M T Terminals
SEATTLE—Central Bldg.
ST. LOUIS—Shell Bldg., 13th and Locust Sts.
YOUNGSTOWN—Stambaugh Bldg.

LONDON REPRESENTATIVE—The Youngstown Steel Products Co., Dashwood House, Old Broad St., London, E. C. England

YOUNGSTOWN

"GALVANIZED SHEETS PROTECT" -- -- "SAVE WITH STEEL"

where most of the work was done outside of the owner's land.

Also, where a contract was made with husband when the wife held title to the property.

Missouri. B. A. D.

Answer:—Under the decisions of your courts in Missouri, I should say that you are entitled to a mechanic's lien on the facts as you state them. Your courts have held that a property is subject to a lien where plumbing work is done on the property and a pipe line is run into the street to connect with gas, water or sewer pipes. The lien is good for the materials and work which were installed and performed outside of the property line of the owner. This being so, the mere fact that a line is run 225 feet down the street, as in your case, undoubtedly would make no difference in the decision of the court. The ground upon which these decisions rest, is that the property has been benefited by the installation of materials and the performance of labor and should therefore bear the burden of it, even though a part of the materials and some of the labor were installed and performed outside of the limits of the property. If this reasoning is good for a job which goes ten feet outside the property line, there would seem to be no good reason why it should not apply to work performed for a distance of 225 ft. In fact, the longer the distance the possible greater enhancement of the value of the property.

This reasoning applies, of course, only to cases in which the work done outside of the property lines is a part of the work performed on the property itself. You would have no lien if your contract merely provided for the running of a water line from the street supply to the owner's property line and stopped there, for you would have done no work under a contract which provided for work on the property itself.

A case decided by your courts is in point. Feeney vs. Rothbaum—reported in 137 Southwestern Reporter 82—was a case where a plumber installed the plumbing in a house and ran a line to the water line in the street. Among his charges were items for ma-

Top row: Mary K. Leeder, Delina P. Best, Lucile Boyer, Eleanor Downey, Anne Wilkins, all of Turner Supply Co., Chester, Pa. Bottom row: Master plumbers and salesmen at the outing of the Delaware County, Pa., Master Plumbers' Association

Saleable!

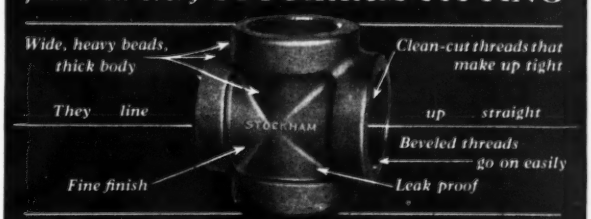
Trupar is *selling*. Many plumbers all over the country have found this line of electric refrigeration complete, dependable, economical, and saleable; a new source of profit, right in line with their business.

TRUPAR
ELECTRIC REFRIGERATION

The Trupar line contains cabinets in colors, residence models, apartment and commercial equipment, in all practical sizes. Selling through the trade: fulfilling promises: making friends.

Trupar Mfg. Company
140 Davis Ave., Dayton, O.

SIX POINTS OF EXCELLENCE
found on every STOCKHAM FITTING



STOCKHAM PIPE & FITTINGS COMPANY
Birmingham, Alabama

Beautiful Colors in China

Turquoise Blue
Antique Gold
Pearl White
Jet Black

Old Ivory
Shell Pink
Dove Gray
Sea Green

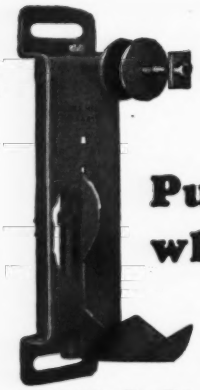
No. 20 Double Action Lever

The Indiana Brass Co.
Frankfort, Indiana

When you Recommend a Kaustine septic tank . . .

. . . . . not only is the good name of Kaustine behind every Kaustine Septic Tank—but likewise the highly respected name of Armco Ingot Iron. Every Kaustine Septic Tank bears the Armco Trade Mark. You do not gamble with your reputation when you recommend and install Kaustine Septic Tanks, for they are not only backed by these two nationally known organizations, but they are sold only through the plumbing jobbers.

KAUSTINE COMPANY, INC.
Perry New York



Double Bottom Hung Wall

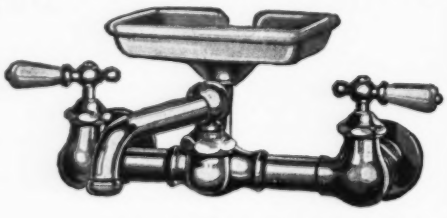
Put that Radiator where you want it!

Because of its wide range of adjustability, the Moore Radiator Hanger makes it possible for you to put the radiator right where you want it, without the waste of time necessary for taking accurate measurements.

Made of all pressed steel of highest grade. No cast iron parts to break or crack. Furnished complete by the factory—nothing for the contractor to supply.

See the Moore Radiator Hanger line at your jobber's. Examine them closely. There's a Moore for every type of radiation, including the new tube types.

Carty & Moore Engineering Company
[Incorporated]
611 W. Larned Street • • Detroit, Michigan



THE new S & K FIVE ONE FOUR Swing Spout Kitchen Sink Faucet is a decided advance in making the kitchen sink neater in appearance and more efficient.

The FIVE ONE FOUR is designed for the **"new Eight-Inch Back Sinks."**

They are well balanced and of pleasing design **(not massive and ornate as some others).** They are exceptionally well made and are priced very low.

You'll want to install the S & K FIVE ONE FOUR just as much as your customers will want to buy them.

Write us for Sample and Prices

STREET & KENT MFG. COMPANY
1954-64 Clybourn Avenue, CHICAGO

terials and labor in running the water pipe outside the owner's premises to the street supply. The court said:

"In Henry vs. Plitt—84 Missouri 232, McDermott vs. Class, 140 Missouri 14; Missouri Valley, etc., Co. vs. Brown, 50 Missouri App. 407—it was held that fences and sidewalks, if constructed with the building and under one contract, were lienable, though the walk was not on the lot. Since those cases the statute has been amended so as to provide a lien for sidewalk independent of the building. But the principle of the decisions remains in force. In Pullis vs. Hoffman, 28 Missouri App. 666, a lien was allowed for illuminating tiling, extending into the sidewalk, which lighted the basement.

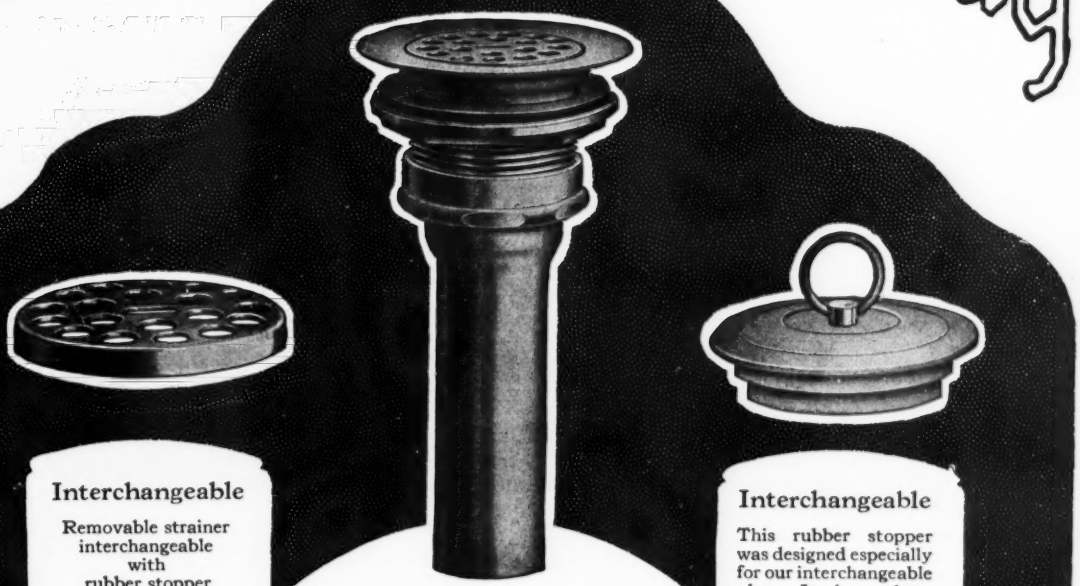
"And it was held in Beatty vs. Parker, 141 Massachusetts 523, that a lien could be had for a drain pipe constructed with the house, extending through the cellar wall into the yard and thence into the street and into the sewer. This case seems favorably cited in Dugan Cut Stone Co. vs. Gray, 114 Missouri 497. We therefore hold that if the item "lead in street" had been stated so as to be understood, and it was thereby seen that it connected or was used in connecting the water, gas or sewer with those pipes in the street, it would be lienable."

It may be of interest to know that the case just cited held that under the statute, charges for payments for permits could not be included in the lien, as the statute provided only for a lien for materials and work, fixtures, engine, boiler or machinery.

In the case of Pullis vs. Hoffman, cited above, it was held that the mere fact that some part of the building extended beyond the marginal line of the lot, did not deprive a material man of his lien for materials furnished on that part of the building.

Your second question, regarding the liability of the wife's property to be made subject to a lien on a contract made with the husband, is more difficult to answer with certainty. I believe, however, that you should be able to prove that the husband was acting as the wife's agent in the matter of your contract. The courts are usually quick to decide in favor of a lien under such circumstances, and require but little evidence to show that the husband was acting as his wife's agent. You will see from the cases which I quote later, that the mere fact that the property stood in the wife's name, does not subject it to a lien for work performed under a contract with the husband. There has to be some show of acts or statements by the wife, which tend to prove that in the eyes of the law she was the real party behind the contract. It has been held in your courts that what is known as the rule of undisclosed principal, applies in the cases of mechanic's liens. This rule, general speaking, is, if Jones makes a contract with Smith, and, after it is performed, Jones learns that Smith was as a matter of fact acting as agent for Brown, Jones can sue Brown as the undisclosed principal in the case, even though he had never known that Brown had anything to do with the contract. In cases where a husband contracts for work on his wife's property, the courts require much less proof of an agency than they do in cases in which the agent is not the husband of the

White Metal Sink Plug



Interchangeable

Removable strainer interchangeable with rubber stopper

1¼ or 1½-in. Tail Pieces

Any gauge or length

3-in. Diameter Face

Ask your jobber

Interchangeable

This rubber stopper was designed especially for our interchangeable plug. It has *three points of contact* that absolutely prevent water leakage.

Leather washers and full 1½-inch I. P. S. Thread.

Ask your jobber

All exposed parts in the sink, where acid conditions are most severe on plated metal are BENEDICT NICKEL

SPEND YOUR VACATION

NATURE'S FAIRYLAND

VIEW FROM BOLDT CASTLE — ALEXANDRIA BAY

AT THE THOUSAND ISLANDS ST. LAWRENCE RIVER

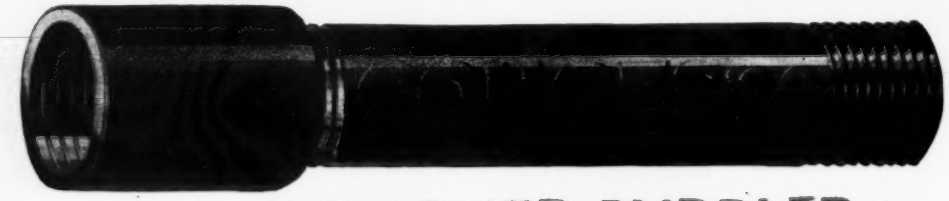
Branch Offices—
NEW YORK
PHILADELPHIA
CHICAGO
ATLANTA
LOS ANGELES
SEATTLE

J. B. Wise
Incorporated
WATERTOWN
NEW YORK

The Standard of Quality since 1877

THERE IS NO SUBSTITUTE FOR

COHOES



OLD FASHIONED PUDDLED GENUINE WROUGHT IRON PIPE

There's no satisfaction like a job well done. Theories must be laid aside when work commences.

Cohoes Pipe has *demonstrated* in 75 years of every conceivable use that it resists corrosion and rust and is leak proof.

Our hand book of "Pipe Facts" contains authoritative information of sizes, weights and uses. Send for it.

COHOES ROLLING MILL CO.

COHOES, NEW YORK

Branches: **NEW YORK-CHICAGO-LOS ANGELES-SEATTLE-PORTLAND BOSTON - CLEVELAND - DETROIT - NORFOLK - MINNEAPOLIS**

wife. In other words, it is so evident in most cases, that the husband was actually acting as his wife's agent, that the courts say in effect, that they will give a verdict for the contractor if he will only give them something upon which to hang the verdict.

You have not stated in your question sufficient facts to warrant a verdict in your favor, in this case, for the mere fact that the wife knew you were doing the work on her property and may have made some suggestions, is not sufficient to prove agency. But the border line between "mere suggestions" and "directions" by the wife as to various things that she wanted done, is a very hazy one. Undoubtedly you will be able to show that she took a hand in giving orders and directions, and it is very probable that the court will lean to your side of the case in rendering a decision.

You will perhaps get an idea of what the law is in Missouri from the following quotation from the note appended to Section 8212 of the 1909 Revised Statutes of Missouri:

"A husband has no capacity (merely because he is a husband) to charge his wife's estate with a lien. He can do so only as an agent. Garnet vs. Berry, 3 A. 197. The husband must have acted for the wife and not for himself. Chicago, Etc., Company vs. Mahan, 53 A. 425. It is not enough to charge a lien upon the wife's real estate that she saw the improvements going on and made suggestions as to the work; the evidence must show that she appeared as an actor in person or through an appointed agent. Alexander vs. Perkins, 71 A. 286. See, also, Barker vs. Berry, 8 A. 446. The mere fact that the wife knew of the improvements and subsequently signed a note with her husband for the work, is not proof of a contract on her part. Hughes vs. Anslyn, 7 A. 400. See also Kansas City, etc., Co. vs. Brundage, 25 A. 268.

"But where a married woman had personal knowledge of work done and materials furnished and gave personal 'directions' respecting same, her property was held subject to a lien, although her husband was the principal manager. Collins vs. McGraw, 47 Mo. 495. A preponderance of the evidence is sufficient to establish husband's agency. Becker, etc., Company vs. Stevens, 84 A. 558. See also Kneuzel vs. Stevens, 155 Mo. 280."

The reason for these decisions lies in the fact that your Missouri statute provides that to have a right to a lien, it is necessary that there be a contract with the owner, or his agent, trustee, contractor or subcontractor.

If you secure an attorney familiar with such cases, it is probable that he can convince the court, with the evidence which you will be able to produce, that the husband was acting as the wife's agent.

◆

Modern electric ventilation in the kitchen is rapidly becoming a standard demand for the well equipped home. Electric ventilators are also being installed in basements to remove wash day odors, tendencies toward dampness, or smells arising, perhaps, from the heating equipment. A third place one now finds electric ventilation is in an attic dormer window for the purpose of residence cooling in hot weather.

Save Man Power With These Improved Pipe Tools

Man power is costly—even when paid for on an hourly basis. By reducing fatigue, you increase accomplishment and add to profits. It is an outstanding characteristic of ARMSTRONG BROS. Improved Pipe Tools that they work faster, require less muscle.

One man can easily thread a 2 inch pipe (ordinarily a 2 man job) with ARMSTRONG BROS. Adjustable Pipe Dies. Made of Vanadium Tool Steel they take a keener edge and hold it far longer. The features of their improved design include: Correct cutting angle, "Backed - off" chasers, correct throat angle and ample chip clearance. Fit all standard stocks of this type. Sold singly or in sets.

ARMSTRONG BROS. Stock and Die Sets

Each set consists of one stock and a complete assortment of Dies, Guides and a drop forged Wrench.

Write today for Catalog P-10.

ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"
323 N. Francisco Ave. Chicago, U. S. A

ARMSTRONG BROS.

A Seamless Toilet Seat is a more sanitary seat

The "STASCO" method of manufacturing reduces pure sheet Pyralin to a solution and then re-applies it in *seamless* form. The resulting smooth, glistening white Pyralin surface is entirely *seamless*—and therefore absolutely sanitary.

There are no cracks, laps or joints to loosen and collect germs, but just an even coating of sheet Pyralin that is impervious to moisture. Thus the seat may be cleaned daily—as it should be—without shortening its long life.

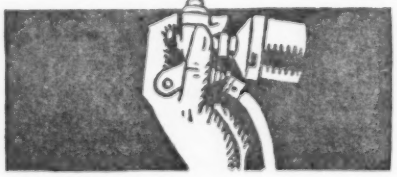
No. 196. "STASCO" Empire White. Another "STASCO" Empire White Seat that is all white even to its hinges. Reasonably priced and seamless.

Because the "STASCO" Empire White Sprayed seat is seamless and more sanitary; lasts longer and is better looking, it is the one sprayed seat your customers will demand. Be prepared to fill their needs.

Your jobber will supply you

STANDARD TANK & SEAT COMPANY
CAMDEN NEW JERSEY

No. 358. "STASCO" Empire White. A good-looking, oval seat with cast brass hinges. Seamless and Sanitary.



No. 360. "STASCO" Empire White. Designed to reduce the visibility of nickeled hinge, presenting only the clean Empire White finish. Seamless.

In the Window
On the Counter
STASCO SEATS
New Sanitation for the Health Center of the Home
with this Seamless Seat
This Seamless Seat Puts Hospital Cleanliness in your Bathroom
Seamless
for BEAUTY SANITATION LONG LIFE
STASCO SPRAYED SEATS
STASCO
THE SEAT OF ETERNAL WHITENESS

Selling the STASCO *Seamless story to your customers*

Millions of consumers will read about "Stasco" Empire White Seamless Toilet Seats during September, October and November.

The September issue of the American Home magazine will carry a striking four-color insert that will catch the eye of every reader. Attractive advertisements will also be appearing in House and Garden, House Beautiful and Better Homes and Gardens.

To remind customers that they had intended to buy one of these *seamless* sanitary seats, we have mounted the beautiful four-color insert as a display for your window or counter. An attractive envelope stuffer is also available.

This "Stasco" advertising and merchandising will build profitable sales for you.

Write your jobber today.

Mail this Coupon Today

Standard Tank & Seat Co., Camden, N. J.

Gentlemen:

☐ Send me a cross section of a *stock* "Stasco" Empire White Seamless Sprayed Seat so I may see for myself that it is the *best* sprayed white seat on the market.

☐ Send me complete details of your advertising and merchandising plan.

Name .....

Address .....

over 3,000,000
DOLE AIR VALVES
are giving faithful service to 750,000 users

That's a lot of air valves, and the way *Dole* makes them, means a lot of satisfaction to users, and good profits to jobbers and contractors. For years The Trade has known that you cannot go wrong on a *Dole* Product. Well made—nationally used and endorsed.

These are good reasons why *you* should profit by the sale of *Dole Syphon Air Valves*

May we send you full particulars?

Automatic All Metal

Dole

Non-adjustable Thermostatic

SYPHON AIR VALVE

The Dole Valve Company, 1913-33 Carroll Ave., Chicago, Ill.

Interpreting a Plumbing Code

(Continued from Page 74)

Venting of Water Closets Set Back to Back

Fig. 10 makes reference to Sec. 109, which is also definite concerning a venting practice which is not the case in all plumbing codes.

This section is as follows:

"If two fixtures other than water closets be set back to back, and the traps serving them be located not more than two feet from the vent, separate back vents for the fixtures will not be required, provided that the waste line be not less in diameter than one size larger than the trap served, and that the vent be not less in diameter than 1½ inches. Two water closets set back to back may have one vent, in diameter not less than 2 inches, provided that the main vent stack have a diameter not less than 4 inches, and that the water closets be not located more than 3½ feet from the vent, measuring from the floor line to the vent, along the developed waste line."

Not often is instruction given by a plumbing code on such a matter as covered by Fig. 11.

Allusion to Sec. 108 covers the requirements that all vent lines pitch in such a manner as to drain all condensation into the drainage system.

Section 97, referred to in another drawing, Fig. 12, is as follows:

"Any soil or drain pipe may be branched, provided the combined areas of such branches as are required to extend in full size through the roof equal or exceed the area of the main pipe and one of the branches is not less than 4 inches in diameter, as specified in section 96. A branch which serves fixtures on not more than two floors (including in floors any cellar or basement) and does not exceed 20 feet in vertical projection need not extend in full size through the roof, but shall be vented as required in section 106."

In Fig. 13 we reproduce the drawings showing the preferred method of installing the septic tank.

Provisions Governing Septic Tanks

While we do not agree with the use of a leaching cesspool as here shown, and believe that the right plan is to discharge the septic tank directly into the sub-soil tile system by means of an automatic siphon, we are showing this and the other drawings to demonstrate Portland's method of interpreting its plumbing code.

In our final illustration, Fig. 14, we show the illustration which covers the requirements demanded in the installation of P traps and drum traps. Such information and instruction as this drawing provides is excellent, and it is needed as well. It not only helps the plumber and the inspection department to co-operate, but this co-operation gives the owner a good job.

The upper sketch in Fig. 14 shows an excellent thing to clear up. The code demands a minimum of 2-inch depth of seal on a P-trap, and in this sketch it is pointed out that in connecting to its vent, the waste from the trap shall not fall more than 2 inches, that is, more than the depth of the seal.

It is far easier to siphon a trap when its outlet to the vent drops below the seal, and it is for that reason that

M S Little

ALL CHINA HANDLE

TANK LEVERS

Feature of No. 131

Double acting—All China Handle—Metal parts are all cast brass—Lever arm is reenforced, yet can be easily bent while in tank.

Packed one in a box.

One more addition to the well known line of complete tank fittings made by The M. S. Little Mfg. Co.

A well proportioned handle with effective double acting mechanism.

Cast brass in all the metal parts.

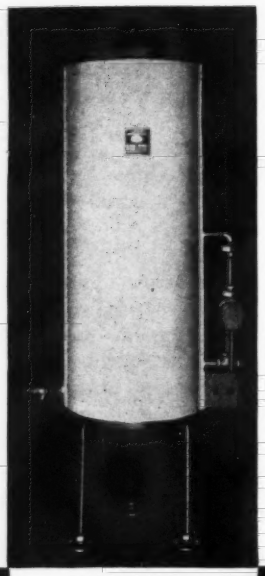
In the well rounded line of Tank Fittings you will find Elbows—Flush Valves—Ball Cocks—Levers—Flanges and the necessary fittings for a complete satisfactory installation.

You're *sure* when you install "Little" Tank Fittings.

The M. S. Little Mfg. Co.

Hartford - - Conn.

THE M S Little MANUFACTURING COMPANY HARTFORD CONN.



"For Sale by the Plumbing Trade"

Appearing on our advertising means that a new type of heater has been added to your line.

Every home that has electric power without suitable gas supply is your prospect.

You have a new opportunity to increase your sales and profits.

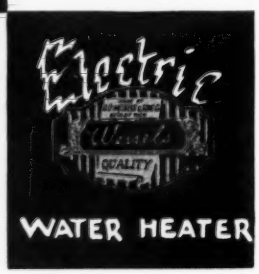
There are models for every domestic need.

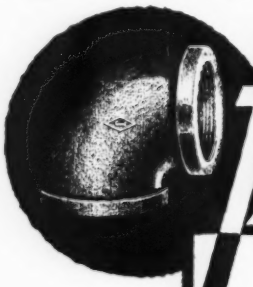
Write for further information.

-o-

D. D. WESSELS & SONS CO.

Detroit Mich.





JARECKI Fittings

All Jarecki Fittings have clean, accurately cut and perfectly aligned threads. Malleable fittings, made from air-furnace malleable, are free from coke impurities. Cast iron fittings are exceptionally close-grained and carefully inspected. A complete line assures a size and style fitted to your requirements. Your inquiries will receive prompt and courteous attention.

[Established 1852]

Jarecki

Jarecki Manufacturing Company

Erie, Penna., U. S. A.

this requirement is made. Although many codes show this point, it does not seem to be well understood, and we are very sure that there are many who cannot understand why it would not be entirely O. K. to use a Y-branch in providing a trap with a continuous vent.

While we have shown only a dozen or so of the Portland interpretative drawings or sketches, out of the 40 that appear on their two sheets, we have selected a variety of subjects, and believe they will show the general idea of what it is intended that they are to bring out.

We mention 40 drawings, but as each sheet contains 21 sections or spaces, there are two of them left unaccounted for. These are made use of by putting into them notes concerning the use and value of the drawings, as follows:

"This code was compiled by practical men, with years of experience in the installation of plumbing, in order that people might be housed and work under sanitary conditions.

"The drawings were made to illustrate the true interpretation of the different sections.

"We believe the home to be the backbone of civilization, and plumbing the principal unit in the sanitation of the home, as without proper laws to maintain sanitary conditions, it would be impossible to house people in congested districts.

"We are of the opinion, if this code is followed, a safe, sanitary installation will be obtained if properly installed.

"The drawings were made by William Hey, chief plumbing inspector, Portland, Oregon."

The constructive and instructive spirit that inspires such an effort as these Portland interpretative drawings, is still further expressed by these two notes that have been given a place on the two sheets of drawings.

Heating Plant and Anthracite Sizes

(Continued from Page 81)

per cent oversize and from 15 to 50 per cent undersize, proved most efficient, with the advantage in favor of chestnut with 5 per cent oversize and with from 15 to 50 per cent undersize.

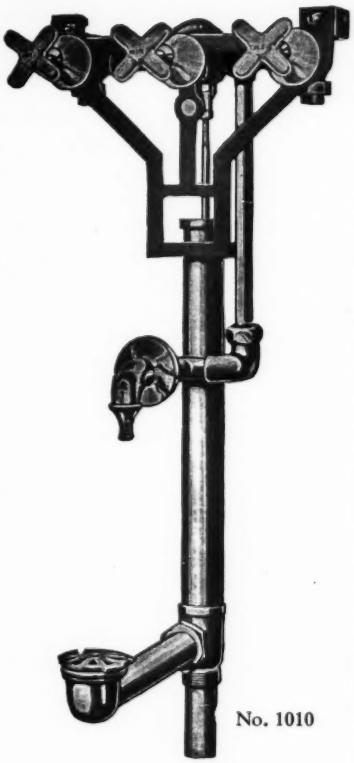
Possible 10 Per Cent Saving from Proper Fuel Sizing

The saving in fuel consumption by the use of properly selected mixtures of sizes smaller than standard commercial egg in the use of heaters with relatively deep fuel beds may be of the order of 10 per cent or better.

It is difficult to lay down any one set of rules governing the selection of the size of fuel for use in a given residence. In general, however, two important factors affecting successful operation are the strength of draft available in the boiler, and the fuel capacity or volume of the firepot in which the coal is to be burned. While a determination of the correct size of anthracite coal has, heretofore, been largely a matter of custom or experiment, a number of general rules have been formulated which may be used in recommending a size of fuel.

General Instructions

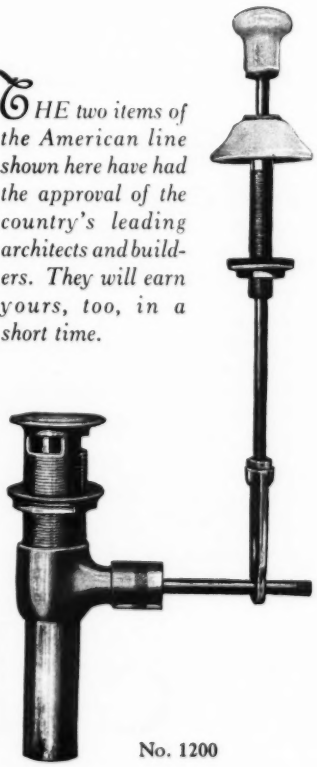
Keeping in mind the above refinements in mixtures which must be employed in most efficient operation and



No. 1010

American

THE two items of the American line shown here have had the approval of the country's leading architects and builders. They will earn yours, too, in a short time.



No. 1200

Your Compensation

It is not alone in the profit you make from your work that your compensation lies.

There is far more satisfaction in the knowledge that your work is done well, that it will stand as a recommendation for you in the future and that your customer will refer to you as a reliable contractor.

You cannot accomplish that satisfaction, you cannot know that extra compensation, if you install brass goods that will not or cannot stand the wear that modern usage subjects it to.

If, in the past, you have had experience with cheap brass goods that have given you trouble, change now, to American —it insures your knowing that extra measure of satisfaction that comes from work well and permanently done.

From your jobber

American Sanitary Mfg. Co.
Abingdon .·. Illinois

Everything you need to know to sell Jewell Temperature Regulators — Complete in this New Book

Send for your free copy today

This new Jewell manual has been compiled for you — to help you merchandise automatic temperature control, first necessity of this age of automatic home heating.

You can use this new book word for word in turning Jewell prospects into buyers. You can use it and the tremendous sales possibilities of the Jewell line (described in complete detail) to put new life into your business during the months when other lines fall off.

You can make sales right from the book. 25 questions and answers explain every feature of Jewell operation.

This new manual is yours for the asking. Write for your copy today.

MINNEAPOLIS-HONEYWELL REGULATOR COMPANY
Executive Offices: 2801 Fourth Avenue So., Minneapolis
Factories: Minneapolis, Minn. and Wabash, Ind.

The New Jewell Manual
Table of Contents

Part 1—The Jewell Temperature Regulator. How to sell it.

Part 2—What it is. What it does. A chapter full of powerful sales ammunition.

Jewell
TEMPERATURE REGULATOR

saving in fuel, egg coal makes a most convenient size in cases where the depth and diameter of the firepot are not too small. Egg coal should not be recommended for use in firepots less than 22 inches in diameter, or in cases where the depth from the fire door ledge to the grates is less than 14 inches. Egg coal further possesses the property of requiring a moderate draft for efficient burning. In cases where chimneys are short, or the draft poor, this property frequently results in successful operation with egg coal when other sizes would not be satisfactory. Care should invariably be taken to prevent the use of too much draft in conjunction with this size.

Stove coal is, largely through custom, in greater demand for house heating purposes than any of the other sizes produced. This is probably due to the fact that it is almost universally recommended on a basis that stove anthracite is satisfactory for the average condition. As complete heating satisfaction can only be secured through specific recommendations for each individual condition, the contractor should, in all cases, specify a size best fitted to the individual case.

In Final Analysis Correct Installation Most Important

In all of this, it is necessary to remember that fuel sizing does not offer a panacea for all heating troubles. Proper manipulation, proper sizing and proper control have to do with obtaining the greatest number of B.t.u. from the coal burned. Whether or not these B.t.u. are delivered to the spaces to be heated depends upon the correctness of the heating installation. The final conclusion of the research report is as follows:

"Of far greater importance to the householder than anthracite sizing are: (a) Adequate heater capacity; (b) uniform fuel quality; (c) above all, clean coal—low in ash content and free from serious clinkering ingredients."

This places responsibility of operation on the contractor. Fuel sizing will not correct a faulty installation.

Top row: P. M. Beecher, Samuel Sloan & Co.; E. N. Kulp, American Radiator Co., winner of pig chase; C. J. Mosbruger of Crane Co.; C. T. Hale of the U. S. Radiator Corp. Bottom row: A. J. Wolf, Samuel Sloan & Co.; Emil Geyer; Ed. Miller, secretary of Rochester association; Louis Yauchzl. Photos taken at the Rochester, N. Y., outing.

OVERTON
Roof Flashings
for
From Your Jobber
EXTRA HEAVY or STANDARD PIPE.
LEAK-PROOF.
BUTLER MFG. COMPANY
Minneapolis :: Minnesota

Continuous Unfailing Operation

The external phosphor bronze spring on the Nelson Relief Valve assures continuous, unfailing and safe operation of the boiler at all times.

Adjust the Nelson to any desired pressure from 1 lb. to 175 lbs. "A real relief valve" is a title which the Nelson has deservedly earned.

Ask your jobber and write us for Catalog No. 34.

ESTABLISHED 1894
THE STACK HEATER COMPANY
BALL COCKS, INDIRECT HEATERS, GAS WATER HEATERS, HEAT INTERCHANGERS, HOT WATER GENERATORS — STACK PRODUCTS — RELIEF VALVES, NO TANK VALVES, NONBIAS VALVES, STEAM WATER MIXERS, PRESSURE REDUCING VALVES
TWO HUNDRED AND FIFTY STUART STREET
BOSTON

JONES
THIS low down tank is reasonably priced, neat in appearance and sturdy enough to stand the hardest usage. Easy to rough-in.
Write for our catalog showing complete line.

Fig. 369

JONES HOLLOW WARE CO.
BALTIMORE :: MARYLAND

Sump Pumps . . . NO SERVICING
Correctly powered with ¼ H. P. repulsion induction G. E. motors, Taber Sump Pumps require no servicing after installation because of in-built quality.
¶ Write for descriptions and prices.
See Page 909 Domestic Engineering Catalog
TABER
TABER PUMP CO. *Est. 1859*
490 Elm Street, Buffalo, New York

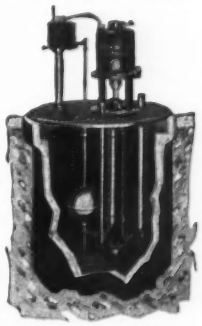


Fig. 194 aG Taber Midget Sump Pump

Catalog Sheets for

Below is a list of manufacturers whose loose catalog sheets will be furnished by "Domestic Engineering," upon request, to Plumbing and Heating Contractors who are equipping loose-leaf binders.

These sheets are reprints of catalog pages appearing in "Domestic Engineering Catalog Directory." They conform to the standards adopted by the plumbing and heating industries, as to page size, punching and weight of stock. "Domestic Engineering" also handles the Speedlok binder which is especially designed to hold standardized sheets. The price of the binder is $3.00.

If you are assembling a working catalog from standardized catalog sheets, write Domestic Engineering Co., 1900 Prairie Avenue, Chicago, on your letterhead, giving the names of concerns listed below whose lines you are interested in, and we shall be glad to send you the sheets without charge. Further information about loose sheets or binders furnished upon request.

Abendroth Bros. ..... Port Chester, N. Y.
Absolute Con-Tac-Tor Corp. ..... Elkhart, Ind.
Acme Asbestos Covering & Flooring Co. ..... Chicago, Ill.
Acme Frost Proof Closet Mfg. Co. ..... Baltimore, Md.
Acme Refining Co., The ..... Cleveland, Ohio
Alamo Engine Co. ..... Hillsdale, Mich.
Alberene Stone Co. ..... New York City
Alliance Tank Co. ..... Alliance, Ohio
American Beauty Stove Co. ..... Erie, Pa.
American Brass Co. ..... Waterbury, Conn.
American District Steam Co. ..... North Tonawanda, N. Y.
American Manganese Bronze Co. ..... Holmesburg, Pa.
American Pipe Tool Co. ..... Chicago, Ill.
American Radiator Co. ..... New York City
American Steam Pump Co. ..... Battle Creek, Mich.
Armstrong Bros. Tool Co. ..... Chicago, Ill.
Armstrong Mfg. Co. ..... Bridgeport, Conn.
Artisan Metal Products Co. ..... Charlestown, Mass.
Atchison Specialty Mfg. Co. ..... Atchison, Kans.
Atkins Mfg. Co., H. C. ..... St. Louis, Mo.
Atlantic Tubing Co. ..... Providence, R. I.
Atlas Brass Foundry Co. ..... Columbus, Ohio
Automatic Gas Steam Radiator Co. ..... Pittsburgh, Pa.

Badger & Sons Co., E. B. ..... Boston, Mass.
Ballantine, B. D. ..... Fitchburg, Mass.
Baltimore Valve Corp ..... Baltimore, Md.
Barnes Tool Co., The ..... New Haven, Conn.
Barrett Mfg. Co., James ..... Boston, Mass.
Bay Ridge Specialty Co., Inc. ..... Trenton, N. J.
Bead Chain Mfg. Co. ..... Bridgeport, Conn.
Beardsley & Wolcott Mfg. Co., The ..... Waterbury, Conn.
(Successors to Berbecker & Rowland Mfg. Co.)
Beaton & Cadwell Mfg. Co., The ..... New Britain, Conn.
Beaton & Corbin Mfg. Co., The ..... Southington, Conn.
Beilman Water Heater Co., Inc., The ..... Buffalo, N. Y.
Bell & Gossett Co. ..... Chicago, Ill.
Beneke Mfg. Co. ..... Chicago, Ill.
Benson Co., Inc., Alex R. ..... Hudson, N. Y.
Bignall Co., The ..... Medina, N. Y.
Blue Seal Chemical Co. ..... Roselle, N. J.
Boosey Mfg. Co., Norman ..... Detroit, Mich.
Borden Co. ..... Warren, Ohio
Bowlus Mfg. Co., The ..... Springfield, Ohio
Boyle & Co., Inc., C. A. ..... Chicago, Ill.
Bradley Washfountain Co. ..... Milwaukee, Wis.
Brunswick-Kroeschell Company ..... Chicago, Ill.
Buckeye Pump & Mfg. Co. ..... Columbus, Ohio
Buffalo Meter Co ..... Buffalo, N. Y.
Burkert Co., Inc., R. N. ..... Trenton, N. J.
(Formerly Trenjer Specialty Co.)
Burnham Boiler Corp. ..... Irvington, N. Y.
Butler Mfg. Co. ..... Minneapolis, Minn.
Butler, Thos. F. ..... Lorain, Ohio

Cabco Iron Works, Inc. ..... Gowanda, N. Y.
Capitol Brass Works ..... Detroit, Mich.
Carty & Moore Engineering Co., Inc. ..... Detroit, Mich.
Case & Son Mfg. Co., W. A. ..... Buffalo, N. Y.
Celina Mfg. Co. ..... Celina, Ohio
Central Foundry Co. ..... New York City
Central Radiator Co. ..... New York City
Central Specialty Co ..... Detroit, Mich.
Chamberlain Co., The ..... Pittsburgh, Pa.
Chase Brass & Copper Co., Inc ..... Waterbury, Conn.
Chemical Toilet Corp. ..... Syracuse, N. Y.
Chicago Faucet Co., The ..... Chicago, Ill.
Chicago Flexible Shaft Co., (Sprinkler Division) ..... Chicago, Ill.
Chicago Granitine Mfg. Co. ..... Chicago, Ill.
Chicago Pipethread Machine Co. ..... Racine, Wis.
Chicago Pump Co ..... Chicago, Ill.
City Brass Corp. ..... New York City
Cleveland Brass Mfg. Co., The ..... Cleveland, Ohio
Cleveland Heater Co. ..... Cleveland, Ohio
Columbia Radiator Co. ..... McKeesport, Pa.
Comet Radiator Co. ..... Philadelphia, Pa.
Commonwealth Brass Corp. ..... Detroit, Mich.
Compound Injector & Specialty Co. ..... Chicago, Ill.
Conemaugh Iron Works ..... Latrobe, Pa.
Connors Paint Mfg. Co., Wm., The ..... Troy, N. Y.

Consolidated Ashcroft Hancock Co., Inc. ..... New York City
(Division of Manning, Maxwell & Moore, Inc.)
Corcoran Mfg. Co. ..... Cincinnati, Ohio
Covert Company, H. W. ..... New York City
Coyne & Delany Co. ..... Brooklyn, N. Y.
Crampton-Farley Brass Co. ..... Kansas City, Mo.
Crist & Schilken Co. ..... Pittsburgh, Pa.
Crocker Chair Co. ..... Sheboygan, Wis.
Croll & Son, Jesse G. ..... Philadelphia, Pa.
Crown Die & Tool Co. ..... Chicago, Ill.
Curtin Valve Co., A. F. ..... Medford, Mass.
Curtis & Curtis Co., The ..... Bridgeport, Conn.

Dahlquist Mfg. Co. ..... South Boston, Mass.
Dail Steel Products Co. ..... Lansing, Mich.
Dargent, Charles ..... Brooklyn, N. Y.
Dart Mfg. Co., E. M. ..... Providence, R. I.
David-Franklin Co. ..... Irvington, N. J.
Davis Engineering Corp. ..... New York City
De-Bar Co. ..... Brooklyn, N. Y.
Decatur Pump Co. ..... Decatur, Ill.
Dececo Co., The ..... Boston, Mass.
Delaware Tool Co. ..... Wilmington, Del.
d'Este Co., Julian ..... Boston, Mass.
Detroit Lubricator Co. ..... Detroit, Mich.
Dick Brothers, Inc. ..... Reading, Pa.
Dixie Flashing Co., Inc. ..... Birmingham, Ala.
Dole Valve Company ..... Chicago, Ill.
Donnelly Mfg. Co. ..... Malden, Mass.
Duro Wood Products, Inc. ..... Capac, Mich.

Eagle-Picher Lead Co., The ..... Cincinnati, Ohio
Eastern Foundry Co., The ..... Boyertown, Pa.
Ebinger Sanitary Mfg. Co., D. A. ..... Columbus, Ohio
Economy Heater Co. ..... Chicago, Ill.
Economy Pumping Machinery Co. ..... Chicago, Ill.
Eljer Co. ..... Ford City, Pa.
Elkay Mfg. Co. ..... Chicago, Ill.
Elkhart Foundry & Machine Co. ..... Elkhart, Ind.
Elkhart Iron Works ..... Elkhart, Ind.
Emerson & Sack, Inc. ..... Boston, Mass.
Enterprise Brass Works ..... Muskegon, Mich.
Erie Tool Works, The ..... Erie, Pa.
Estabrook's Sons, R. ..... South Boston, Mass.
Ever-Ready Gas Heater Valve Co. ..... Detroit, Mich.
Excelsior Leather Washer Mfg. Co. ..... Rockford, Ill.
Excelso Products Corp. ..... Buffalo, N. Y.
Exeter Brass Works ..... Exeter, N. H.

Fairbanks Engineering Co. ..... Worcester, Mass.
Federal Radiator Co. ..... Zanesville, Ohio
Ferguson & Lange Foundry Co. ..... Chicago, Ill.
Fischer Spring Co., Chas. ..... Brooklyn, N. Y.
Flagg & Co., Inc., Stanley G. ..... Philadelphia, Pa.
Florence Stove Co. ..... Boston, Mass.
Forest Mfg. Co ..... Hickory, N. C.

General Ceramics Co. ..... New York City
Gerard Mfg. Co. ..... Dickson City, Pa.
Gerstein & Cooper ..... South Boston, Mass.
Gerstein & Sons, H. ..... South Boston, Mass.
Gleockle, Jr., A. F. ..... Rochester, N. Y.
Globe Brass Mfg. Co. ..... Cleveland, Ohio
Goulds Pumps, Inc. ..... Seneca Falls, N. Y.
Grabler Mfg. Co. ..... Cleveland, Ohio
Grand Haven Brass Foundry ..... Grand Haven, Mich.
Greenfield Tap & Die Corp. ..... Greenfield, Mass.
Grinnell Co., Inc. ..... Providence, R. I.

Haas Co., Philip ..... Dayton, Ohio
Hajoca Corporation ..... Philadelphia, Pa.
Hamburg Boiler Works, Inc. ..... Hamburg, Pa.
Hanson Brothers Scale Co. ..... Chicago, Ill.
Hays Mfg. Co. ..... Erie, Pa.
Healey Brass Foundry Co., Peter ..... Evansville, Ind.
Healy-Ruff Company ..... St. Paul, Minn.
Heap & Sons, Wm. ..... Grand Haven, Mich.
Heller Bros. Co. ..... Newark, N. J.
Hercules Chemical Co ..... New York City
Hermetik Co. ..... Philadelphia, Pa.
Hetzel, J. G., Estate of ..... Newark, N. J.

Loose-Leaf Binder

Hindley Mfg. Co. ... Valley Falls, R. I.
Hoffman Specialty Co. ... Waterbury, Conn.
Hollands Mfg. Co. ... Erie, Pa.
Holyoke Heater Co. ... Holyoke, Mass.
Hotstream Heater Co. ... Cleveland, Ohio
Hudson Brass Works, Inc. ... Brooklyn, N. Y.
Hunt & Son, C. B ... Salem, Ohio
Hutchison Regulator Sales Corp. ... New York City

I-X-L Pump & Mfg. Co., Inc. ... Philadelphia, Pa.
Ideal Furnace Co. ... Detroit, Mich.
Ideal Pump Co. ... Detroit, Mich.
Illinois Engineering Company ... Chicago, Ill.
Inland Iron Works, Inc ... Joliet, Ill.

J. R. S. Specialties Mfg. Co., Inc. ... Patchogue, N. Y.
Janette Mfg. Co. ... Chicago, Ill.
Jenkins Brothers ... New York City
Johns-Manville Corp. ... New York City
Johnson Mfg. Co. ... Detroit, Mich.
Johnson-Washburn Co. ... Boston, Mass.
Jones Hollow Ware Co. ... Baltimore, Md.
Josam Mfg. Co. ... Cleveland, Ohio
Judd Co., H. L. ... New York City

Kahn & Co., H. ... Philadelphia, Pa.
Kainer & Co. ... Chicago, Ill.
Kaustine Co., Inc. ... Perry, N. Y.
Keeney Mfg. Co., The ... Newington, Conn.
Kellogg Mfg. Co. ... Rochester, N. Y.
Kemoshyne Products, Inc. ... Philadelphia, Pa.
Kemp Mfg. Co., C. M. ... Baltimore, Md.
Kennedy Valve Mfg. Co. ... Elmira, N. Y.
Ketcham Mfg. Corp., G. M. ... Brooklyn, N. Y.
Kewanee Boiler Company ... Kewanee, Ill.
Keystone Brass Works ... Erie, Pa.
Keystone Pottery Co. ... Trenton, N. J.
Kieley & Mueller, Inc. ... New York City
King Union Co. Inc ... Providence, R. I.
Kitson Co. ... Philadelphia, Pa.
Kleinert Rubber Co., I. B. ... New York City
Knott Mfg. Co. ... Tell City, Ind.
Kortick Manufacturing Co. ... San Francisco, Cal.
Kretschmer Mfg. Co. ... Dubuque, Iowa
Kupferle Foundry Co., John C. ... St. Louis, Mo.

Lavelle Rubber Co. ... Chicago, Ill.
Lawson Co., The F. H. ... Cincinnati, Ohio
Lawson Mfg. Co. ... Cleveland, Ohio
Leader Brass Foundry & Mfg. Co., The ... Cleveland, Ohio
Leavitt Machine Co. ... Orange, Mass.
Lehman Sprayshield Co. ... Philadelphia, Pa.
Lehnert & Co. ... New York City
Leonard-Rooke Co. ... Providence, R. I.
Liquid Veneer Corp. ... Buffalo, N. Y.
Lissberger & Son, Inc., Marks ... Long Island City, N. Y.
Little Giant Mfg. Co. ... Minneapolis, Minn.
Luzerne Rubber Co., The ... Trenton, N. J.
Lytton Mfg. Corp. ... Franklin, Va.

McAlear Mfg. Co., The ... Chicago, Ill.
McCaffrey Mfg. Co ... Chicago, Ill.
McCoy Mfg. Co., Inc. ... New York City
McDonnell & Miller ... Chicago, Ill.
McGurrin Supply Co. ... Grand Rapids, Mich.
Malleable Iron Fittings Co. ... Branford, Conn.
Martin & Sons, H. P. ... Owensboro, Ky.
Marvel Machine & Brass Works ... Cleveland, Ohio
Meneley-Diederich Co., Inc. ... Los Angeles, Cal.
Michigan Pipe Co. ... Bay City, Mich.
Milford Iron Foundry ... Milford, Mass.
Milwaukee Valve Co. ... Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co. ... Minneapolis, Minn.
Misener & Irving Mfg. Co., Inc. ... Syracuse, N. Y.
Modern Iron Works ... Quincy, Ill.
Modine Mfg. Co. ... Racine, Wis.
Mohawk Septic Tank Co. ... Schenectady, N. Y.
Molby Boiler Co. ... New York City
Moore, F. J. ... Minneapolis, Minn.
Morton Mfg. Co. ... Chicago, Ill.
Muller, Edward ... North Bergen, N. J.

Nash Engineering Co. ... South Norwalk, Conn.
Nason Mfg. Co. ... New York City
National Pipe Bending Co ... New Haven, Conn.
National Steel Tank & Mfg. Co. ... Bradford, Ill.
Neptune Meter Co. ... New York City
Never Rust Co. ... Harrisburg, Pa.
Newark Brass Works ... Newark, N. J.
Newark Brush & Scraper Co. ... Irvington, N. J.
New Britain Machine Co. ... New Britain, Conn.
Newbury Mfg. Co. ... Monroe, N. Y.
Newbury & Son, Jay H. ... Goshen, N. Y.
New York Air Valve Corp. ... New York City
New York Brass Foundry Co. ... New York City
Northern Indiana Brass Co. ... Elkhart, Ind.
Northwestern Chemical Co., The ... Marietta, Ohio
Novelty Steam Boiler Works Co. ... Baltimore, Md.
Nustone Products Corp. ... Union City, N. J.
Nye Tool & Machine Works ... Chicago, Ill.

O-E Specialty Mfg. Co ... Milwaukee, Wis.
Ohio Brass Co. ... Mansfield, Ohio
Ohio Heater Co., The ... Columbus, Ohio
Olsen, H. T ... New York City

Paine Co. ... Chicago, Ill.
Para Rubber Co. ... Newark, N. J.
Paradine Mfg. Co ... Erie, Pa.
Peerless Machine Co ... Racine, Wis.
Penn Engineering Co., The ... Philadelphia, Pa.
Perfection Stove Co. ... Cleveland, Ohio
Phenolic Products Corporation ... Rockford, Ill.
Phillips Drill Co. ... Chicago, Ill.
Phoenix Brass Foundry ... Irvington, N. J.
Pierce, Butler & Pierce Mfg. Corp ... New York City
Pittsburg Water Heater Co ... Pittsburgh, Pa.
Plomb Tool Co ... Los Angeles, Cal.
Plussco Co ... Concord, N. H.
Polygon Products Co ... Boston, Mass.
Porcela-Radax Co ... Pittsburgh, Pa.
Portland Iron Works ... Portland, Ore.
Powers Regulator Co ... Chicago, Ill.

Quad Stove Mfg. Co., The ... Columbus, Ohio
Quaker City Iron Works ... Philadelphia, Pa.

Radiant Steel Products Co. ... Williamsport, Pa.
Radiator Specialty Co ... Charlotte, N. C.
Randolph-Clowes Co., The ... Waterbury, Conn.
Rathbun Products, Inc ... Detroit, Mich.
Rawlplug Co., Inc., The ... New York City
Reed Mfg. Co ... Erie, Pa.
Reinhardt Mfg. Co., Edwin G ... Cincinnati, Ohio
Rhode Island Fittings Co ... Providence, R. I.
Richards Corp. ... Pittsburgh, Pa.
Richmond Foundry & Mfg. Co., Inc ... Richmond, Va.
Ridge Tool Co. ... Elyria, Ohio
Riverside Boiler Works, Inc ... Cambridge, Mass.
Riverside Foundry & Galvanizing Co. ... Kalamazoo, Mich.
Robbins, Gamwell & Co ... Pittsfield Mass.
Rockford Brass Works ... Rockford, Ill.
Rock Island Mfg. Co. ... Rock Island, Ill.
Royal Brass Mfg. Co., The ... Cleveland, Ohio
Rumsey Pump Co., Ltd ... Seneca Falls, N. Y.
Russell Mfg. Co., Inc., John M ... Naugatuck, Conn.
Russell & Co., W. A ... New York City

Sall Mountain Co ... Chicago, Ill.
Sands Mfg. Co ... Cleveland, Ohio
Sanitary-Dash Corp. ... New York City
Sanitary Engineering Co ... Pittsburgh, Pa.
Sarco Co., Inc. ... New York City
Scadron Brothers ... New York City
Scaife & Sons Co., Wm. B ... Oakmont, Pa.
Scientific Heater Co. ... Cleveland, Ohio
S. E. T. Valve & Hydrant Co. ... New York, N. Y.
Self-Cleaning Strainer Co. ... Chicago, Ill.
Selfridge-Norton Mfg. Co ... Cleveland, Ohio
Semler Co ... Jeannette, Pa.
Sherwood Brass Works ... Detroit, Mich.
Shoe-Letcher Co., Inc ... Jersey City, N. J.
Simonds Saw & Steel Co. ... Fitchburg, Mass.
Simplex Boiler Stand Co ... Brooklyn, N. Y.
Simplex Mfg. Co ... Chicago, Ill.
Spencer Regulator Co. ... Salem, Mass.
Standard Asbestos Mfg. Co ... Chicago, Ill.
Standard Elsmere Granite Co ... Chicago, Ill.
Standard Tank & Seat Co. ... Camden, N. J.
Standard Water Systems Co. of N. J. ... Hampton, N. J.
Stark Pump Co ... Detroit, Mich.
Sterling Faucet Co ... Newcomerstown, Ohio
Stoll, Chas. J. ... New York City
Stringer Brothers Co. ... Chicago, Ill.
Structural Slate Co ... Pen Argyl, Pa.
Stuart & Co., D. A. ... Chicago, Ill.
Swett Iron Works, A. L. ... Medina, N. Y.

Taco Heaters, Inc. ... New York City
Taylor Co., Halsey W., The ... Warren, Ohio
Teck Manufacturing Co ... Chicago, Ill.
Teekorator, Inc ... Rochester, N. Y.
Tillery's Little Janitor Clock Co. ... Newark, N. J.
Titchener & Co., E. H. ... Binghamton, N. Y.
Trageser Steam Copper Works, John ... Maspeth, N. Y.
Trenton Brass & Machine Co ... Trenton, N. J.
Trimont Mfg. Co., Inc. ... Boston, Mass.
Troop Water Heater Co. ... Pittsburgh, Pa.
Tryco Products, Inc ... Westfield, Mass.

Utility Laboratory, Inc. ... Brooklyn, N. Y.

Van Arnam Mfg. Co. ... Fort Wayne, Ind.
Vanderman Mfg. Co ... Willimantic, Conn.
Vinco Co., Inc. ... New York City
Vitreous Enameling & Stamping Co., Inc. ... New York City
Vogel Co., Joseph A. ... Wilmington, Del.
Vulcatex, Inc ... Chicago, Ill.

Wade Iron Sanitary Mfg. Co. ... Chicago, Ill.
Walker Dishwasher Corp. ... Syracuse, N. Y.
Walworth Company ... Boston, Mass.
Ware Coupling & Nipple Co ... Ware, Mass.
Warnock Manufacturing Co ... Worcester, Mass.
Warren Electric Appliance Co. ... Warren, Pa.
Washington Metal Products Co ... Washington C. H., Ohio
Water Works Equipment Co., Inc. ... New York City
Watts Regulator Co. ... Lawrence, Mass.
Weis Mfg. Co., Inc., Henry ... Elkhart, Ind.
Wesely Co., Chas. ... Chicago, Ill.
Wessels & Sons, D. D. ... Detroit, Mich.
Western Wire Products Co. ... St. Louis, Mo.
Wheeling Machine Products Co ... Wheeling, W. Va.
White Flush Valve Mfg. Co. ... Denver, Colo.
White Steel Sanitary Furniture Co ... Grand Rapids, Mich.
Whitlock Coil Pipe Co ... Hartford, Conn.
Wilks Mfg. Co., S ... Chicago, Ill.
Worcester Brush & Scraper Co. ... Worcester, Mass.

"X" Laboratories ... New York City

Yeomans Brothers Co. ... Chicago, Ill.
Yost Mfg. Co ... Meadville, Pa.

COMPLETELY WELDED

Oxyacetylene Welding Can Be Applied Efficiently and Advantageously To Pipe Installations In Residences As Well As the Largest Hotels, Office Buildings and Plants

PIPING in this Milwaukee home was recently welded using Airco Oxygen, Airco Acetylene and Airco-Davis-Bournonville Apparatus.

Eliminating many fittings and making it the equivalent of a continuous leak-free system, such installations demonstrate to plumbing and heating contractors that welding can be applied advantageously to pipe installations in private residences as well as hotels, office buildings and industrial plants.

Specify Airco Gases and Airco-D.B. Apparatus when making your next installation or write to your nearest Airco office listed below for further information.

AIR REDUCTION SALES CO.

HOME OFFICE: 342 MADISON AVE., NEW YORK

Baltimore	Buffalo	Dayton	Louisville	Philadelphia	Seattle
Bettendorf, Ia.	Charlotte, N. C.	Detroit	Milwaukee	Pittsburgh	St. Louis
Birmingham	Chicago	Emeryville, Cal.	Minneapolis	Portland, Ore.	Wheeling
Boston	Cleveland	Jersey City	New Orleans	Richmond	88 Plants
		Los Angeles	Oklahoma City		

AIRCO DAVIS BOURNONVILLE

See the Air Reduction Exhibit at the N. A. P. E. Convention at Chattanooga, Sept. 9-13.

Failure of Owner to Object Taken as Approval of Change in Heating Plans

By Leslie Childs

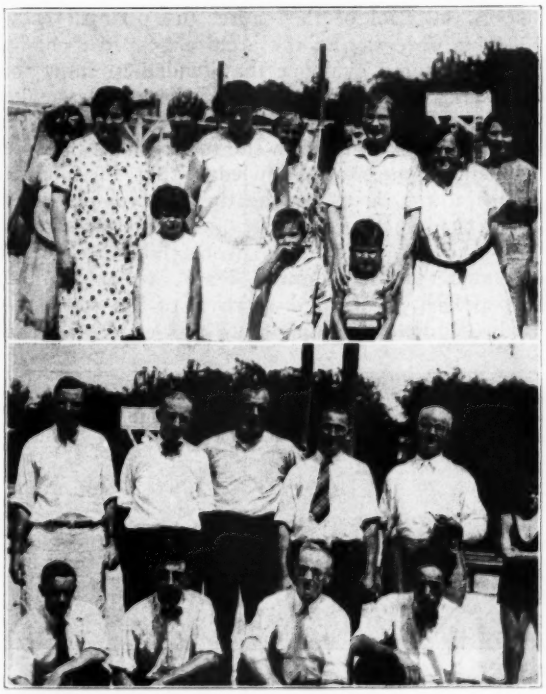
GENERALLY speaking, a heating and plumbing contractor is bound to perform according to the plans and specifications furnished him by the owner, or the latter's architect. And, needless to say, any unauthorized departure from such plans on the part of a contractor is at his risk.

By the same token, it is always well to have the express authorization of an owner, or his accredited agent, before making any material change in plans. But, while safer, express authorization for a change in plans is not always absolutely necessary, where a change is made with the knowledge of the owner, and he subsequently remains silent while the work is in progress.

In other words, the law requires an owner to speak, when he ought to speak, and he may not be permitted to maintain silence, while a contractor performs work different from the plans, and then come forward with the plaint that he never authorized the change. The application of this rule is illustrated in an interesting manner in the Arkansas case of P. G. Company v. Womack, 268 S. W. 353, which arose under the following facts:

Heating Contractor Changes Plans

Here, plaintiff, a heating and plumbing contractor, entered into a contract to install a plumbing and

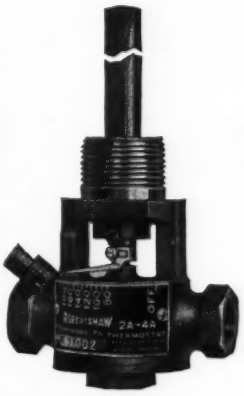


Top picture: Group of ladies attending the outing of the Master Plumbers' Association of Camden, N. J. Bottom picture, front: George Ball, Hajoca Corp.; Jacob Drehrer, E. Limock, Sam. Ricks, Back row: Henry Eichfeld, president of Camden association; E. J. Riegert, C. M. Scull, William Brown, Harry Rose. Photos taken at the recent outing of the Master Plumbers' Association of Camden, N. J.

Every Plumber Should Know About the Various Types of

ROBERTSHAW

Thermostats



Throttling Type

Throttling Type

For Side Arm Water Heaters or Automatic Storage Water Heaters
All sizes from 3/8 to 2 inches

Robertshaw Throttling Type Water Heater Thermostats are fully covered in

CIRCULAR FORM R-4
Write for it!

Snap-Action Type

For Storage Water Heaters and Furnace and Boiler Temperature Control. Gas Pipe sizes from ½ to 2½ inches

Robertshaw Snap-Action Thermostats are illustrated and described in

CIRCULAR FORM R-1
Write for it!

Snap-Action Type

Room Temperature Control

Room Temperature Control

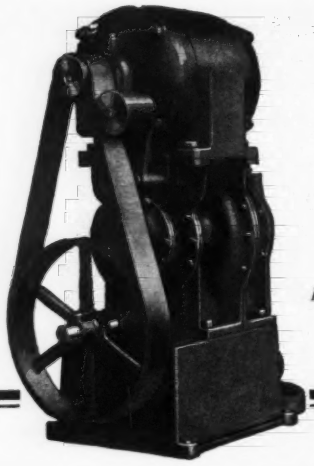
Entirely Gas operated
Non Electric—No Volatile Liquids
Easily Installed
Attractive in appearance
Will control the Room Temperature within a range of 1½ degrees plus or minus

Robertshaw Room Temperature Thermostats are fully described in

CIRCULAR FORM R-3
Write for it!

Any or all of the Above Circulars are yours for the Asking.

ROBERTSHAW THERMOSTAT CO.
YOUNGWOOD, PA.



ALAMO DORWARD
Rotary Power Heads

Run in a bath of oil—the ideal way to lubricate—can't fail to run smoothly, noiselessly, always.

Ask your jobber about Alamo

ALAMO ENGINE COMPANY
HILLSDALE - - MICHIGAN

IMICO UNIONS

NOTE THE BRASS DISC

Made of Refined Malleable Iron with Brass Seat Inserted in Place by Powerful Pressure So That It Cannot Become Detached.

Approved by Underwriters' Laboratories.

ILLINOIS MALLEABLE IRON CO.
Chicago, Ill.

Manufacturers Full Line Iron Pipe Fittings

heating system in a business building being erected by the defendant. By the express terms of the contract, plaintiff was required to perform the work in accordance with the drawings and instructions of an architect employed by the defendant to supervise the work. And the plans and specifications furnished the plaintiff provided for an overhead heating system.

The overhead system was specified, it appears, because when the plans were drawn the architect was under the impression that there was not sufficient drainage in the basement to permit an up-feed system. However, when plaintiff examined the basement and made measurements he discovered that it was considerably deeper than the profile indicated, and would in fact admit an up-feed system.

Plaintiff thereupon got in touch with defendant's architect and called his attention to the facts. The architect thereupon orally ordered the discard of the overhead system and the installation of the up-feed system.

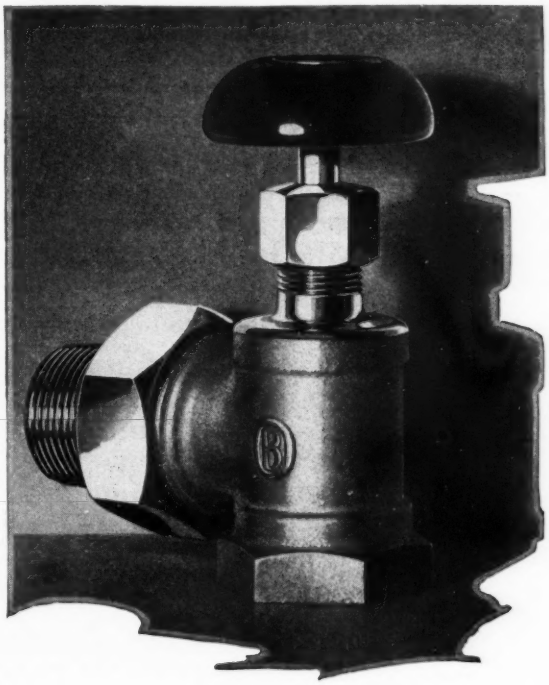
Acting on these instructions, the plaintiff made the change, completed his contract, and, when the work was done, demanded payment.

At this stage of the proceedings, the owner declined to pay on the ground that the change in the heating system was a material change, and unauthorized by him.

Further, the defendant, owner, also denied the right of his architect to bind him by the orders given for the change. The plaintiff, contractor, thereupon filed suit to collect.

Upon the trial of the cause, the plaintiff established his orders from the architect for the change, and then offered evidence that tended to show that the defendant had knowledge of these orders when they were given. In addition, the plaintiff showed that the defendant lived in the town where the work was being done, had knowledge that the plaintiff was installing an up-feed heating system instead of an overhead system, and during the progress of the work made no objection. From this, the plaintiff contended that defendant's silence, when he should have spoken, constituted approval of the work as it was being done. In upholding this contention, and

Front row: George Slimpin, Kruebbe Co., New Orleans; P. Luck, W. E. Dunn, Ruud Mfg. Co., J. W. Sheppard, Crane Co., C. J. Nelson, Wolverine Brass Works. Back row: S. L. Dumestre, Crane Co.; R. C. Hollingsworth, American Radiator Co.; J. C. Kenney, manager, American Radiator Co., Birmingham, Ala.; H. Ludlow, N. O. Nelson Mfg. Co., Jackson; J. Mack, Dixie Mill Supply Co., New Orleans; J. Mallner, Hoffman Heater Co. Photo taken at the recent convention of the Louisiana-Mississippi Plumbing and Heating Dealers



With Your Make-up Problem in Mind

The ultimate in Hot Water Valve design is found in the Ohio Brass No. 40 Line. Attractive appearance, long service life and assured ease of make-up, all combined in one valve. If you have not already, why not let your wholesaler send you some and see for yourself why so many contractors insist on Ohio Brass valves?

AND now consider the Ohio Brass Hot Water Radiator Valve. Like all Ohio Brass Valves there is an extra profit in the make-up because you save about five minutes time per valve on the installation. Here are a few of the reasons: Heavy lugs so a spud wrench won't slip. Combination of curved and tapered surfaces forming the smoothly machined union seat. Correct distribution of metal. No hard pulling to crack the nut which would mean starting over again.

Ohio Brass Valves are built, start to finish, with your make-up problem in mind. Forty years of specialization in the manufacture of valves has incorporated many advantages into Ohio Brass valves—one of them is saving you about sixteen cents on each Ohio Brass valve you install at no additional cost to you. A saving worth getting, isn't it?

Ohio Brass Company
Mansfield, Ohio
1074V

Ohio Brass Co.

NEW YORK PITTSBURGH PHILADELPHIA CHICAGO ATLANTA BOSTON CLEVELAND ST. LOUIS WM. P. HORN CO: LOS ANGELES SAN FRANCISCO SEATTLE

PORCELAIN INSULATORS
LINE MATERIALS
RAIL BONDS
CAR EQUIPMENT
MINING MATERIALS
VALVES

POSITIVE uniformity of metal content and of threading accuracy are assured in Mueller Brass Pipe Fittings through the Mueller process of manufacture. There can be no more difference between any two Mueller brass fittings, regardless of when they are made, than there is between two silver dollars.

They will screw up water-tight and permanent regardless of the conditions under which they are installed. They are free from sand holes or flaws of any kind. They have clean cut, whole threads of standard gauge and size that make them easy to work with.

From your jobber.

Send for Mueller Pipe and Fittings Catalogue

Mueller Brass Co.
PORT HURON - MICHIGAN
THREE GENERATIONS OF BRASS MAKING

in ordering judgment for the plaintiff, the court reasoned as follows:

What the Court Decided

"The . . . plaintiff discovered . . . that the basement would be deeper than the profile showed, and that drainage could be secured. He at once informed the architect of this fact. The architect then instructed him to change from the overhead to the up-feed system.

"It was also shown that the defendant lived in the town where the work was being done and himself directed the superintendent of the plaintiff to make some minor changes in the work as it progressed. . . . Under the circumstances . . . it is fairly inferable that he knew that the change from the overhead to the up-feed system had been made, and that the change was due to the instructions given by his own architect.

"In the face of these facts the defendant permitted the plaintiff to go ahead with the installation of the heating system under the changed plans. If he proposed to dispute the rights of his own architect to change the plans under the contract, good faith required that he should have done so before the plaintiff went to the trouble and expense of installing the heating system. . . .

"The conscience of the defendant was therefore touched in the matter, and after allowing the plaintiff to install the changed system without objection on his part, he must be presumed to have consented to the change, and the doctrine of equitable estoppel applies in this case. . . ."

In other words, the law would not permit the defendant owner to stand by, with knowledge that the plaintiff was working in good faith on changed plans, make no objection, and then upon the completion of the work defeat payment of the price on the ground that the contract had not been complied with. That if the defendant did not approve the decision of his architect to change the plans, it was his duty to speak when speaking would have been effective, and not after the plaintiff had gone ahead and completed the work under the changed plans.

As noted in the beginning, heating and plumbing contractors may well be cautious about following changed plans, in the absence of express orders from the owner. Or orders from the latter's architect, after ascertaining the authority of the architect to make them. By far the safer plan in situations of this kind is to have clear cut authority for any material changes before they are undertaken.

However, the case reviewed was carefully considered by the court, and is one of the clearest in the books on the point here under discussion. And, while it does not purport to announce hard and fast rule on the subject, it does constitute a valuable illustration of facts and circumstances, under which an owner's failure to object to the manner of work, was held to amount to his approval.

ENDURING COPPER ~
RIVERSIDE
COPPER
RANGE
BOILERS
There Is Only ONE Riverside
There is only ONE Genuine Riverside Copper Boiler made. If you want not only the protection that copper gives, but also the added assurance of the Riverside name—if you want efficiency—economy — long life — BE SURE IT'S A RIVERSIDE.
Copper will not rust—copper will not corrode—and Riverside design and manufacturing care, add to these features.
RIVERSIDE BOILER WORKS, INC.
CAMBRIDGE MASS.

THE NIAGARA

FIVE-POINT-PROOF

PROOF 1

The branch wastes are vented at the crown preventing self-siphonage of the fixture traps.

PROOF 2

Branch wastes discharge into the vent at a steep downward grade as in the "Y" and 1/8 bend type fittings.

PROOF 3

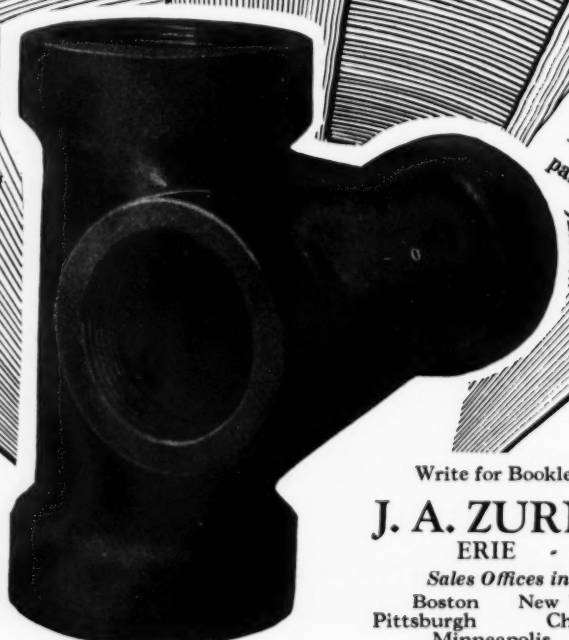
In the crosses the branch wastes discharge separately into the main waste pipe and cannot discharge into each other.

PROOF 4

The waste cannot splash into the throat of the vent and deposit soap and grease to clog the vent.

PROOF 5

Any of these fittings can be installed within a standard 2 in. x 4 in. stud partition.



SAN-TEED PLUMBING PRODUCTS MADE FROM VIRGIN METAL

Patent Pending

Write for Booklet and New Low Prices

J. A. ZURN MFG. CO.

ERIE - - PENNA.

Sales Offices in the following Cities

Boston New York Philadelphia
Pittsburgh Chattanooga Chicago
Minneapolis Denver Dallas
Los Angeles Seattle San Juan, Porto Rico

Progress in the Oil Burner Industry

(Continued from Page 82)

hydrocarbon oils free from water, acid, grit and fibrous or other foreign matters likely to clog or injure the burner or valves. Grades 5 and 6 shall be hydrocarbon oils, free from grit, acid, and fibrous or other foreign matters likely to clog or injure the burner or valves. If required, it shall be strained by being drawn through filters or wire gauze of 16 meshes to the inch. The clearance area through the strainers shall be at least twice the area of the suction pipe and the strainers shall be in duplicate. The detailed requirements for these grades of oil are indicated in the accompanying tables. Further details are published in a set of specifications

Table 1—Detailed Requirements for Domestic Fuel Oils

Grade of Oil	Flash Point		Water and Sediment Maximum	*Pour Point Maximum	Distillation Test		Viscosity Maximum
	Min.	Max.					
No. 1 Light Domestic Fuel Oil A light distillate oil for use in burners requiring a high grade fuel.	110 degrees Fahr. or legal	165 degrees Fahr.	0.05 percent	15 degrees Fahr.	10 percent Point Maximum 420 degrees Fahr.	End Point Maximum 600 degrees Fahr.	
No. 2 Medium Domestic Fuel Oil A medium distillate oil for use in burners requiring a high grade fuel.	125 degrees Fahr. or legal	190 degrees Fahr.	0.05 percent	15 degrees Fahr.	10 percent Point Maximum 440 degrees Fahr.	90 percent Point Maximum 620 degrees Fahr.	
No. 3 Heavy Domestic Fuel Oil A distillate fuel oil for use in burners where a low viscosity oil is required.....	150 degrees Fahr. or legal	200 degrees Fahr.	0.1 percent	15 degrees Fahr.	10 percent Point Maximum 460 degrees Fahr.	90 percent Point Maximum 675 degrees Fahr.	Saybolt Universal at 100 degrees Fahr. 55 Seconds

* Lower or higher pour points may be specified whenever required by conditions of storage and use. However, these specifications shall not require a pour point less than 0 deg. Fahrenheit under any conditions.

which may be had upon application to either the American Oil Burner Association or DOMESTIC ENGINEERING.

The day is not far-distant when every community in America will have at least grades 1 and 2 available. Then, both the user of oil for home heating and the burner manufacturer will be able to do their part intelligently and scientifically.

The Oil Burner Market of the United States

An investigation was planned and conducted for Oil Heating Institute as the first stage of a continuous research program to be carried on by that institute for

PALLEY
Bathroom Cabinets

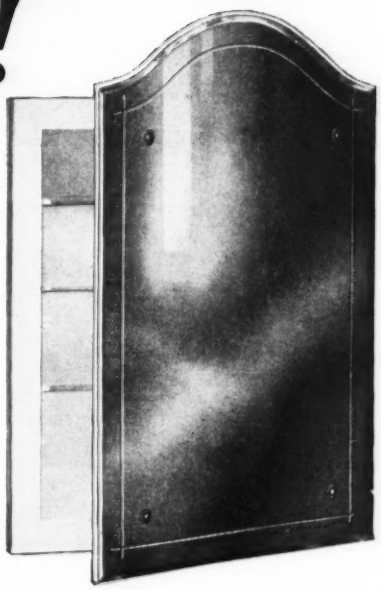
New!

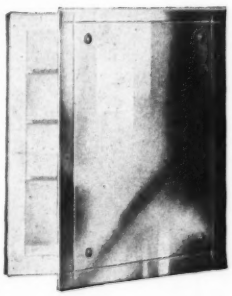
All-Glass Door Types

have mirror resting on metal ledge, without weight on bolts, carefully cushioned, shock-proof and one-piece rust-proof metal boxes, no seams or exposed edges.

Framed Glass Door Types

have metal frame with door sealed in; mirror well-cushioned and built to withstand severest shocks. Hand-etched bordered mirrors with polished edges on either type!





Outstanding Features

Sturdily, yet exquisitely constructed. Hand-etched borders, polished edges on mirrors. In two beautiful designs, Venetian or Colonial Hand-rubbed lacquer finish, concealed hinge and stop combination.

Mirrors of highest quality, protected against steam and dampness.

Variety of colors to meet every current style demand.

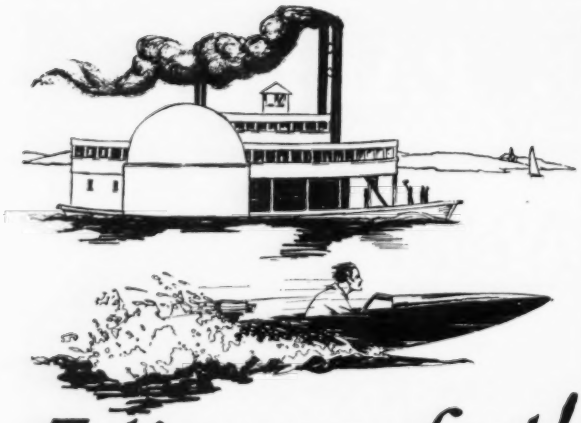
.. practical, profitable

The introduction of this new line of bathroom cabinets is not an over-night development. It took us months—days and days of perfecting design and construction, considerable research in finding out for ourselves what the trade really desired—before we made a cabinet good enough to bear the Palley mark. The result is that now you are offered the last word in this type of bathroom equipment—quality that speaks for itself and at a price that makes it easy for you to make real profit! Write us at once.

Attractive Territory Open

The Palley line is fast being assigned to exclusive distributors in various sections. There is still much territory available and we will be glad to discuss attractive propositions with responsible, high-grade sales concerns. Write at once.

PALLEY MFG. CO.
1021 Bidwell St., N. S. PITTSBURGH, PA.



5 times as fast!

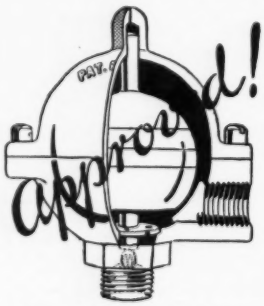
A Mississippi side-wheeler churns laboriously along at 6 miles an hour, while a tiny outboard motorboat skips by at 30—5 times as fast!

The 5-to-1 ratio is well known among plumbing and heating contractors in another connection. It represents the comparative rate of pressure increase to temperature increase in closed domestic hot water supply systems.

Protect against explosions by using Red Tops

A Red Top Relief Valve, Model No. 1, installed in a domestic hot water supply system, provides an unfailing relief outlet when skyrocketing pressures approach the danger point. It is simple in construction and works automatically on the gravity principle, relieving at 50, 75, 100 and 130 lbs. as set.

So reliable is its operation that it bears the approval of the Underwriters' Laboratories, Inc., America's foremost testing organization. So, too, does the Red Top Relief Valve Model No. 2, which relieves at 30 lbs., and forms the basis of an efficient and economical pressure system of hot water heating.



Sectional View, Model No. 1 for domestic hot water supply systems

Let us give you further information. Use the coupon below.

Neptune Meter Co.
50 E. 42nd St. New York, N. Y.
Branch Offices in Principal Cities

Red Top Relief Valve

NEPTUNE METER CO. D.E. 9-7-29
50 East 42nd Street, New York, N. Y.
Please send me a copy of the new edition of your folder, "Protection," which describes Red Top Relief Valves and their operation.

Name.....
Street.....
City.....
State.....

the purpose of keeping its members fully informed of conditions affecting the industry, as they arise. This research program was carried on in 1928, and its need with a comparative rating of the various parts of the United States in terms of the market for oil burners was expressed as being most vital now that the industry has accomplished the first stages of its work namely, the production in quantity of satisfactory burners and the gaining of general consumer acceptance for them. In determining this rating it was set forth that so far as the general public is concerned, the purchase of an oil burner depends upon the possession of a sufficiently high standard of living to appreciate its value and upon the possession of sufficient wealth to make the purchase. Other factors, according to the institute report must be

Table 2—Detailed Requirements for Industrial Fuel Oils

Grade of Oil	Flash Point		Water and Sediment Maximum	Pour Point Maximum	Viscosity Maximum
	Min.	Max.			
No. 4 Light Industrial Fuel Oil					Saybolt Universal at 100 degrees Fahr.
An oil known to the trade as a light fuel oil for use in burners where a low viscosity industrial fuel oil is required	150 degrees Fahr.	See Note*	1.0 percent	See Note**	125 Seconds
No. 5 Medium Industrial Fuel Oil					Saybolt Furol at 122 degrees Fahr.
Same as Federal Specifications Board Specification for Bunker Oil "B" for burners adapted to the use of industrial fuel oil of medium viscosity	150 degrees Fahr.		1.0 percent		100 Seconds
No. 6 Heavy Industrial Fuel Oil			Water Sediment		Saybolt Furol at 122 degrees Fahr.
Same as Federal Specifications Board Specification for Bunker Oil "C" for burners adapted to oil of high viscosity	150 degrees Fahr.		1.75 percent 0.25 percent		300 Seconds

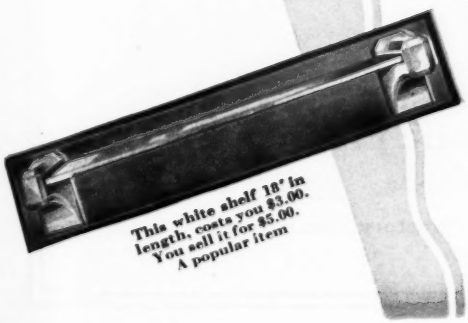
* Whenever required, as for example in burners with automatic ignition, a maximum flash point may be specified. However, these specifications shall not require a flash point less than 250 deg. Fahrenheit under any conditions.

** Pour point may be specified whenever required by conditions of storage and use. However, these specifications shall not require a pour point less than 15 deg. Fahrenheit under any conditions.

considered in laying out the entire national market for oil burners. First, all modern burners require electricity for operating motors and either gas or electricity for ignition purposes. It is therefore impossible to sell burners where the former is not available. Furthermore, the oil burner still requires a certain amount of service on the part of the dealer who makes the installation. It is obviously impossible for a service organization to operate efficiently over a sparsely populated district.

It is further pointed out in the report that competition from gas fuel wherever the price of gas makes it competitive with the price of oil, is extremely serious. Also,

Now—China Fixtures With Color *Fired in!*



This white shelf 18" in length, costs you $3.00. You sell it for $5.00. A popular item

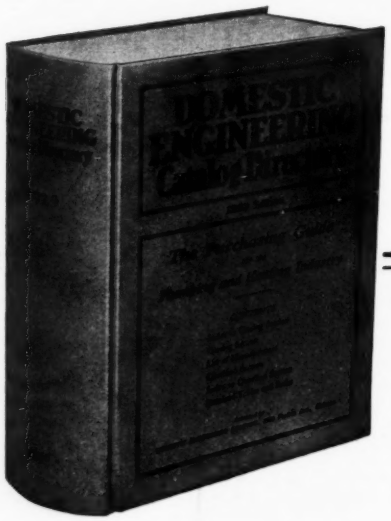
WE WANTED all homes to have more beautiful and longer-lasting china bathroom fixtures; so we made these fixtures of hard, vitreous china with beautiful pastel shades FIRED RIGHT IN. The colors cannot fade, chip or peel off and are evenly distributed over the fixtures.

Now you can sell your customers colored fixtures that are good-looking, durable, easy to clean and surprisingly moderate in price.

These W-W colored Sani-Sets come in a full range of beautiful pastel shades including Spring Green, Autumn Brown, Dawn Blue, French Ivory. Also Ebony and Glistening White.

Additional pieces, including 18 inch and 24 inch shelves, double robe hook, combination grab rail and soap dish, are available. Write today for complete information on this fast-selling line that will pay you handsome profits.

Woodward-Wanger Co.
Philadelphia Chicago, Illinois
Oakland, California



Contains the Catalogs of 528 manufacturers of Plumbing & Heating Products.

Standard Catalog Size 7¾x10⅝ inches contains thousands of illustrations.

It's Easily Found In Domestic Engineering Catalog Directory

Because of the many thousands of items manufactured for use in the plumbing and heating industry, it is difficult for the wholesaler, specialty dealer and contractor to keep track of the various sources of supply.

Domestic Engineering Catalog Directory will make this difficult task easy. It contains in one compact volume information that would require vast filing space and considerable work to keep the material usable. The new 1929 edition contains the latest information available.

The catalog section gives the user a picture and description of thousands of plumbing and heating products. This section is carefully indexed and cross indexed, making it possible to locate very quickly the pages on which any particular item is illustrated and described. Often, the time and trouble saved in locating one item more than pays the small charge made for a copy of this Directory.

Many of the thousands of different items used in the plumbing and heating industry are known by several names although they are similar in construction and designed for the same purpose. In the classified section of **Domestic Engineering Catalog Directory** all products are given a main heading, under which a complete list of the manufacturers making this item are listed. In addition, this section is indexed and cross indexed in such a way, that the user can find the manufacturers of any particular item by looking under any name that is in common use.

The name and address section of **Domestic Engineering Catalog Directory** contains the names and addresses of over 4000 manufacturers. This section also contains a list of the branch offices and representatives of many of the manufacturers who use catalog space. This feature enables the user of the Directory to get in touch quickly with manufacturers through their branches or representatives.

Because we know that all who are interested in keeping up-to-date on the buying information of plumbing and heating products will welcome this valuable book, we are making a special approval offer. Fill out the coupon and we will mail the book to you at once prepaid. If for any reason you should decide after 30 days' trial that it is not worth $5.00 or more, return the book to us and the trial costs you nothing. Send for your copy now.

Please send us a copy of the 1929 edition of **Domestic Engineering Catalog Directory** in accordance with the special approval offer. We will either remit $5.00 or return the book within 30 days.

Name.....

Street.....

City.....State.....

Price $5.00 per Copy, prepaid

Published by

Domestic Engineering Co.

1900 Prairie Ave. Chicago, Ill.

Directory Department

another factor, the price of coal, is to be considered but is not as serious a matter insomuch as oil heat is automatic. However, states the report, in the anthracite-producing sections of the country, there are formidable objections to the adoption of oil heat due, principally, to the fact that the economic welfare of the community depends upon its coal mining activities.

Summarized, in the report, in the final analysis, the factors which have a direct bearing on the potential oil burner sales of any section, outside of anthracite producing territory are as follows:

1.—A population sufficient to provide a market for burners.
2.—The possession of a sufficiently high standard of living to appreciate their value.
3.—The possesion of sufficient wealth to make possible the purchase.
4.—The presence of electricity and gas.
5.—The concentration of population to the degree necessary to allow for installation and service.
6.—A rate of increase of population which is at least equal to the average for the country.
7.—A sufficiently high gas rate or a limited supply so that dealers are not confronted with gas competition on all sides.

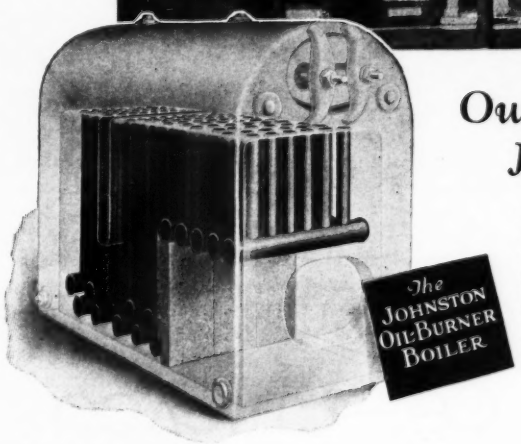
Oil Burner Market Map

An oil burner market map has been prepared from the results of investigation classifying the United States according to four grades. These groupings, according to counties, indicate the existence of four classes of counties, namely excellent, good, fair and poor, which provides a basis of determining locations for concentration of oil burner sales efforts.

In discussing the general situation throughout the country, the report states that while the increase in sales for 1928 over the total for 1927 is in itself a proof of greater acceptance which oil burning has achieved it is not the only condition which holds out promise for the future. It is significant that other industries allied with the oil burner manufacturers are doing promotional work to encourage the sale of oil burners.

A favorable attitude on the part of the buying public toward the oil burner industry was indicated in the statement that a good deal of discrimination is being shown by prospective buyers who now realize that there are good oil burners and poor ones, too. Also, cases of failure or dissatisfaction are more generally attributed to a specific fault in a particular burner than they were a year or two ago. At that time, generally speaking, any difficulty experienced with any burner was made the basis of an indictment of the whole industry. The fact that this condition is disappearing, states the report, means that a definite state of progress has been reached.

The survey shows that the most intensive selling efforts are still confined to expensive homes. The ideal oil burner prospect from the average dealer's viewpoint, appears to be the owner of a $20,000 home now in the process of construction. It is probable that too much attention is being given to these individuals at a sacrifice of time, which might be more profitably expended in locating and following up prospects, whose homes have been constructed for a 5-year or 10-year period.



Owners of Fine Homes are Buying Johnston Oil-Burner Boilers

Owners of fine homes, like the one illustrated above, are installing Johnston Oil-Burner Boilers. One installation in a community leads invariably to many more sales. Records kept by owners show that their costs for oil fuel is frequently lower than what they previously paid for coal. What is more the records show that the **same efficiency** is maintained the second year and the third. The Johnston Boiler is built to give years of trouble-free service.

To build up a host of satisfied customers recommend a Johnston Boiler with your burner. The result will be greater sales and profits for you. Ask for catalogue and dealer proposition.

JOHNSTON BROTHERS, Inc. :: Ferrysburg, Michigan

SLOAN ROYAL-MARINE-GEM FLUSH VALVES

SMITH-YOUNG TOWER
San Antonio, Texas

Atlee B. & Robt. M. Ayres, *Archts.* Jud & Ormond, *Plbr.*
Kohler Co., *Fixtures.*

Equipped throughout with

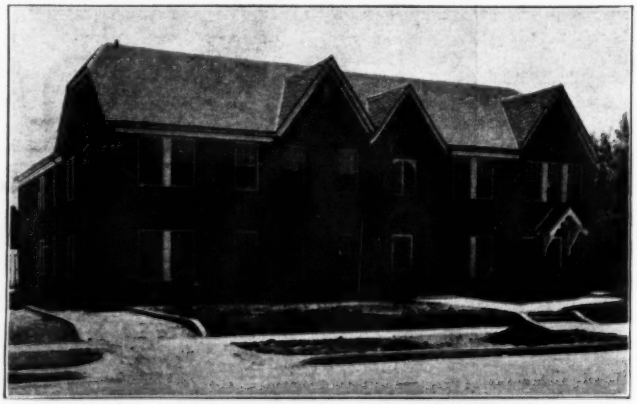
ROYAL
FLUSH VALVES

I. M. Lewis, *Architect* Ralph Peckham, *Plbr*
Standard Sanitary Mfg. Co., *Fixtures.*

FIELD ARMS APARTMENTS
Detroit, Mich.

Equipped throughout with

MARINE FLUSH VALVES



V. E. Shanklin, *Architect* Dallas Plbg. Co., *Plbrs.*
Standard Sanitary Mfg. Co., *Fixtures*

BIERCE APARTMENTS
Dallas, Texas

Equipped throughout with

GEM FLUSH VALVES

SLOAN VALVE CO.—CHICAGO

Branches in All Principal Cities

MARKETS

BUSINESS REPORTS FROM LARGE JOBBING CENTERS

Sales Hold At Fairly Good Level

THE past fortnight developed little of a news nature concerning the business situation in the plumbing and heating field. Wholesalers over the country indicate in reports that contractor demand maintained about the same pace as prevailed during the previous two-week period. At least one producer of copper range boilers is said to have advanced his prices to wholesalers since our last review, but outside of this the market was not disturbed as far as new price sheets are concerned. Purchasing agents for wholesale houses show little inclination to buy in quantities larger than needed to take care of their near future requirements and makers have adjusted their production so as to be able to fill these small, frequent orders without delay. Boiler and radiator manufacturers say that Labor Day brought about a quickening in interest for material among heating contractors and master plumbers are reported getting deeper into finishing work as the year progresses.

July wholesale prices of standard plumbing fixtures for a six-room house, as collected by the department of commerce from reports of twelve representative manufacturers and wholesalers, were $97.94, as compared with $97.54 in June and $100.09 in July, 1928. July shipments of vitreous china plumbing fixtures, including all vitreous chinaware which in regular practice is connected with a drainage system, as reported by 27 manufacturers to the department, were 306,403 pieces, as compared with 282,965 pieces in June and 275,145 in July, 1928. July shipments of enameled sanitary ware, as reported to the department by 22 manufacturers comprising practically the entire industry, totaled 366,595 pieces, as compared with 336,058 pieces in June and 402,810 pieces in July, 1928.

NEW ENGLAND

Activities Maintain Good Level—

The month of August continued to hold the brighter prospects in the building situation which plumbing and heating contractors had been anticipating throughout the earlier part of the year. Residential projects have not developed in a degree comparable with former years, but there has obtained better activity in major construction operations which tends to give this area a fairly healthy seasonal average. The majority of plumbing and heating contractors are well occupied even though very keen competition is felt in the actual closing of contracts. The credit situation, both from contractors' and wholesalers' viewpoints, has been somewhat detrimental to the better volumes which were generally expected by sellers.

Distributors, in a number of instances, reported better sales during the past month than were experienced in any thirty-day period in the year thus far. Manufacturers have also noted a quickening in their shipments to wholesalers, but commodity purchases by the latter still reflect aversion to buying for future requirements. Stocks at jobbing points, however, are ample and sufficiently assorted as to warrant undelayed deliveries to the plumbing and heating trade. Manufacturers, almost without exception, show ability to forward materials when requested. Price levels, according to makers and jobbers, have not been changed, although some makers of tubular brass goods are reported to have revised their prices.

Soil Pipe

Wholesalers in this territory are well supplied with soil pipe for their present needs and are committing themselves only when depletions occur. This, however, does not indicate lack of demand on the part of master plumbers for withdrawals from jobbers' stocks have been steadily increasing and makers' representatives have generally experienced satisfactory volumes for the past month in replacements. Foundries are producing in steady manner and are making early forwardings. No price changes have been announced by manufacturers.

Pipe—Brass, Steel and Wrought Iron

Consumption requirements of all classes of pipe showed some improvement during the past month. Distributors report good disbursements of steel pipe, which is accounted for in the better installations of heating systems and also in the comparatively large absorptions by master plumbers in their roughing-in work. Wrought iron mills are operating in steady manner and are enjoying quite satisfactory seasonal totals. Wholesalers continue to come into the market for brass pipe as definite needs are created and these over weekly periods constitute good sales for makers for this season of the year. Deliveries in all cases are prompt. Makers effected no price changes in these commodities during the past month.

Fittings

While jobbers are not placing large orders for fittings, absorptions by contractors necessitate frequent stock replenishments. Makers have consequently been forwarding quite steadily during the past several weeks and the monthly sales, although not complete, are gratifying. New installations and renovation work account for a seasonally active demand. Both producers and jobbers are sufficiently

well equipped to grant deliveries without delay. The price situation continues firm, makers' and distributors' quotations reflecting no changes.

Enameled Ware

The closing weeks of August evinced only moderate interest on the part of wholesalers. The month as a whole, however, granted good returns, for enameled ware consumption quickened considerably as compared with the progress which previous months held. Distributors are keeping well assorted inventories and find little difficulty in procuring replacements when needed. The average manufacturer is in good production and reports seasonal activity in his shipments. Enameled ware quotations of makers and wholesalers indicate strength, no changes having been announced during the past fortnight.

Pottery

Contractors' needs are continually well expressed both in the case of staples and special pieces for large size operations. Pottery representatives report that the past month's business met their expectations and considerable optimism is displayed over the potential volume of work which they are endeavoring to close. Most wholesalers in this section are carrying well-balanced stocks but at the same time are not anticipating far beyond their near-at-hand requirements. Deliveries from potteries are expeditious in the staple classes.

Plumbers' Brass Goods

Sales volumes in both cast and tubular brass goods were well sustained during the past several weeks, which period terminated a month of well extended activities for most jobbers. Manufacturers' representatives also have been accorded good totals, but because of wholesalers' unwillingness to anticipate for future requirements, they have been obliged to work harder to obtain their quotas. The average jobber has good assortments on his shelves and finds little difficulty in securing replacements when needed. Makers' prices are generally firm, no revisions having been noted within the past month.

Range Boilers

Producers and distributors state that August business reflected the step-up in master plumbers' installations in both new and remodelling projects. Consumption demands have impelled jobbers to better their inventories in a small way and such action has naturally resulted in extension of makers' totals. Production is not curtailed and deliveries from factories are consequently effected in short time. No price changes have been announced by producers.

Boilers and Radiators

The approach of the fall months, together with installations in new developments, gives this market a continually brighter aspect. Wholesalers report active shipment for this time of the year and are also working on sizeable prospects, which will develop into actual business within the next month or two. Factories have built up good reserve stocks and no complaints are heard regarding the delivery service which they offer. Factory price sheets are unchanged.

CENTRAL WEST

Demand Holds at Fair Pace—

The movement of plumbing and heating materials in the Central West territory maintained a fairly satisfactory pace during the fortnight just passed, according to information received from wholesalers in this territory. It still seems to hold true, however, that both manufacturers' and wholesalers' volumes for the year to date are not up to what they were at this time a year ago. Some encouragement is given the situation, though, as contractor demand, in the experience of a number of distributors, has gradually gained momentum in the last few weeks.

Reports indicate that there is a fairly good amount of roughing-in work under way in this territory and, on top of this, master plumbers are getting more and more into finishing work. Then, too, with Labor Day out of the way, manufacturers of boilers and radiators found an increased interest among heating contractors for materials.

Jobbers' holdings are generally ample for the present and fill-in orders placed with manufacturers are forwarded by producers in prompt manner. There is still noted a disinclination on the part of purchasing agents for jobbing houses to buy much in advance of immediate needs. Makers are in possession of ample stocks and are shipping to jobbers in quick time.

Soil Pipe

Demand for soil pipe continues to be rather irregular, according to manufacturers' representatives in this territory. New business reaching foundries consists chiefly of specifications against orders placed some time back. Foundries, while operating at a curtailed scale of production, are able to take care of business in good time. Manufacturers have not changed their published prices.

Pipe—Steel and Wrought Iron

Reports indicate that wholesalers and manufacturers experienced a fairly good seasonal call for steel pipe in this territory during the past two weeks. Wrought iron pipe, too, moved into consumption at a rate that was quite satisfactory to mills and distributors. Wholesalers in general are keeping their holdings of steel and wrought iron pipe at an average working level, re-ordering from mills as necessary. Producers are shipping promptly and have not changed their published prices.

Fittings

Wholesalers say that the various types of fittings moved at a fairly good pace during the past fortnight and contractor requirements show little change from the previous two-week period. Jobbers are following their policy of buying about as material is moved into consumption and seem satisfied with maintaining safe working stocks. Producers have ample stocks and are taking care of business with dispatch. The latter have not changed their published prices to wholesalers.

Enameled Ware

While the changes in prices which went into effect about the first of last month stimulated business considerably in this territory among wholesalers, it still holds that total volumes for the year to date are not what they were at this time a year ago. As a general rule, jobbers are not building up heavy stocks of enameled ware, but their holdings are large enough to insure prompt attention to their customers' needs. Factories are shipping on schedule and have not changed their prices to jobbers.

Pottery

The month of August, especially the latter part of the period, was quite satisfactory for pottery salesmen in this district, according to the majority of reports. Figures recently released by the department of commerce indicate that the movement of this ware from sources of manufacture in July was better than during the corresponding month of last year. Potteries are taking care of orders for staple items quickly and they have not changed their published prices to distributors.

Plumbers' Brass Goods

While wholesalers as a group seem to be fairly well stocked with cast and tubular brass items, manufacturers' salesmen say that buyers for wholesale houses have displayed more of a willingness of late to come into the

market for fresh material. At that, though, jobbers are not getting away from their policy of close range buying and makers are usually being asked to ship immediately. No word of price changes had been received from producers at the time of going to press.

Range Boilers

Reports indicate that the market on galvanized range boilers continues to hold firm. Wholesalers are buying in small quantities as material is moved into consumption and factories are taking care of business without delay. No price changes have been announced by makers of galvanized range boilers since our last review was published.

Boilers and Radiators

Manufacturers say that business in this district has been fairly good ever since prices were changed some weeks back and makers have a large volume of blanket orders on their books. Following Labor Day it is expected that specifications will start to reach manufacturers in an increasingly brisk manner on through the busy autumn season, which ordinarily extends at least to Thanksgiving Day. Factory shipments are prompt and makers have not changed their prices to wholesalers.

NEW YORK

Quiet Market Conditions Prevail—

Activity in this territory was rather slow for this season of year during the past fortnight, with manufacturers and wholesalers alike reporting something of a lull before the Labor Day holiday. With the turn of the month and the return of many executives to their desks, a quickening of inquiry developed among wholesalers which is expected to be reflected in substantial requisitions on plants within the near future, in anticipation of a normally increased demand during the fall season.

There was $24,131,800 worth of building and engineering work contracted for in the Metropolitan district of New York during the week August 17 through August 23, according to F. W. Dodge Corporation. This amount was 61 per cent greater than the total for the preceding week and 11 per cent greater than that of the corresponding week a year ago. Analysis of the construction record showed the following important classes of work: $13,858,200, or 57 per cent of the total, was for residential buildings; $4,691,800, or 19 per cent for commercial buildings; $2,253,000, or 9 per cent, for industrial buildings; $1,594,600, or 7 per cent, for educational buildings.

During the period January 1 through August 23 of this year there was $825,467,500 worth of construction work contracted for in the Metropolitan District of New York, as compared with $994,486,700, the figure for the corresponding period of 1928. The daily average of contracts awarded for the part of 1929 just passed was $4,169,000, as compared with $4,997,400, the daily average for the corresponding period of 1928.

Projects reported last week as being in the contemplated stage amounted to $22,126,100. This amount was only about one-fifth as much as the contemplated figure for last week and it was 37 per cent less than the amount of contemplated work reported during the corresponding week of last year.

The settlement of threatened labor difficulties, final adjudication by the Supreme Court of New York State of the Tenement House Act, the constitutionality of which had been in doubt, and a moderately favorable total of new work contemplated, contributed to the optimism of close students of market conditions.

Soil Pipe

Specifications of cast iron pipe continued moderate during the past fortnight, with some quickening of demand for shipment about the first of the month. Inventories of wholesalers are reported as being somewhat less than normal, and makers likewise report no appreciation in inventories, as production has been closely adjusted to consumption at most plants. No change in prices has been reported.

Pipe—Brass, Steel and Wrought Iron

Only a seasonal slackening in demand for pipe of these types is reported by most manufacturers. These commodities have enjoyed a relatively favorable business since the first of the year, both in comparison with the volume a year ago, and especially when considered in relation to business in general. No changes in prices are reported by makers or distributors, and inventories at all points of distribution are said to be of normal size.

Fittings

Wholesalers report that there has been a fair demand for fittings but that requirements are confined almost entirely to large operations now underway. There has been some increase in the buying of brass fittings, manufacturers state. Stocks on hand of all types at distributing points are reported as being adequate. There have been no changes in prices by either manufacturers or wholesalers, it is reported, and manufacturers are able to effect quick shipment of most staple items.

Enameled Ware

Makers report that the volume of business is appreciably lower than for the same period a year ago, but that the new price sheets are being strictly adhered to. Stocks on hand at plants are such as to afford prompt shipment to wholesalers, who in most instances are not doing any forward buying beyond immediate normal requirements, according to most reports.

Pottery

The volume of business in pottery has shown but little change during the past fortnight, in the opinion of most manufacturers. While a great volume of business is not expected in the period before Labor Day, it is said that current shipments are in line with the trend of the year to date. Wholesalers report adequate inventories, and there have been no changes in prices at any points of distribution.

Plumbers' Brass Goods

The recent increase in inquiry has not materialized in any great amount of business, according to manufacturers of both brass and tubular goods, and it is felt that buyers are awaiting a definite trend in the copper market in so far as it is possible to do so. Wholesalers' stocks are reported in general as being at a minimum and contractor demand, which is mostly for large operations, is promptly followed by requisitions on plants for the replenishment of stocks. There have been no changes in prices reported, and interest has centered largely on the increased volume of copper sold for domestic and export consumption during the last two weeks.

Range Boilers

There have been no changes in prices reported on galvanized range boilers, either by manufacturers or wholesalers. Demand is characterized as steady by most interests and replacement requirements are spoken of as having considerable importance in proportion to the total requirements. Stocks on hand are considered normal by wholesalers and manufacturers. Since our last review at least one manufacturer has issued a new sheet carrying a substantial advance on

copper range boilers, according to reports recently received.

Boilers and Radiators

Shipments by makers have shown an appreciable increase as of the first of the month and, while volume in general is not comparable with that of a year ago, the trend is reported by most wholesalers as being more satisfactory than at any time during the earlier part of the year. It is said that many wholesalers are building up inventories against the anticipated fall demand, and foundry stocks are considered adequate. Quotations are characterized as firm at all points of distribution, with one manufacturer advancing prices on boilers during the last week of the month, according to reports.

MIDDLE ATLANTIC

Business Lacks Snap—

Regardless of the fact that some wholesalers and manufacturers serving the Middle Atlantic territory feel that business has given a better account of itself during the past fortnight than was noticeable during the first weeks of August, it falls away short of what has come, through the activity of previous years at this time, to be expected. That business is better for some manufacturers is accounted for in that some jobbers are anticipating their probable future requirements in preparation for an increased early fall demand. Then, too, there are wholesalers in this section of the country who have already felt an upward trend in the calls for products, especially where finishing materials are concerned. Without question the industry is competing keenly for the business that becomes available, but despite this prices on the whole are holding remarkably well. Aside from slight readjustments in the prices of plumbers' brass goods by some manufacturers and the few changes the new sheets of boiler manufacturers have issued, notice of which appeared in the survey previous to this one, there have been no changes in prices within the two week period this report covers. The stocks of wholesalers have been somewhat below normal but, on the other hand, those of manufacturers have been and are such that quick deliveries are obtainable.

The report of the F. W. Dodge Corp. dealing with construction contracts awarded in the Middle Atlantic States discloses practically the same fluctuations as have obtained throughout the year. These reports indicate that during the 33d week the amount involved in building fell off from $14,402,200 reported for the 32d week to $8,746,200, but during the 34th seven day period came back to $13,537,100. Of this last amount $8,638,200 went into residential buildings; $2,838,900 into educational, hospital and public buildings, the balance being devoted to public works and public utilities. A building report included in the news bulletin of the Virginia Plumbing and Heating Educational Bureau shows a slackening trend in operations.

Soil Pipe

The situation where soil pipe is concerned changed little in the two weeks that have elapsed since the last review. Wholesalers have been able to maintain stocks sufficient to meet the demands of their trade by placing small orders from time to time. This buying reflects the demands of master plumbers rather closely and when totaled involves the movement of fairly good amounts of cast iron pipe. Producers' stocks are not heavy but have enough strength to meet demands promptly. Manufacturers have made no change in prices.

Pipe—Brass, Steel and Wrought Iron

Any change in brass pipe consumption from the moderately good rate that has obtained during August is on the side of improvement. This margin, however, is slight. Concerning steel pipe, shipments involve an amount slightly in excess of previous years in mid-August. While this movement is not heavy it was created to some extent by commitments for after Labor Day delivery. Wrought iron sales suffered considerably during August in comparison to those of July, giving the past thirty days a rather poor position. All pipe shipments are made promptly. Prices from manufacturers have remained undisturbed.

Fittings

Wholesalers to some extent are anticipating their requirements and are bringing their stocks of fittings up to a higher point. This is especially true of cast iron and malleable types and is influenced by the approach of the heating season. Contractors gave but little evidence of buying interest beyond the seasonal point that has characterized brass fittings for the past thirty days. Makers have reported no change in prices. Shipments are going forward promptly.

Enameled Ware

Between the releases on contracts made earlier for enameled ware that was intended for particular jobs and the activity which followed the recent revision of prices by manufacturers, fixtures have experienced a sustained movement that has given August a high position in point of volume. Master plumbers also have manifested considerable interest in this commodity. Both manufacturers and jobbers are equipped to take care of demand promptly. Producers have made no change in prices.

Pottery

With the finishing season upon them master plumbers are requiring considerable pottery. This fact coupled with the business that is being placed involving fixtures that are intended for structures not yet ready has prevented the loss of any ground gained during the first weeks of August when demand looked up well. Potters are able to fill orders on staples without delay. Prices have not been disturbed by manufacturers.

Plumbers' Brass Goods

Shipments into this territory from the plants of manufacturers have held up well during the closing weeks of August. New business, however, has lacked the snap producers would like to witness. In some instances at least the releases do not give the stocks of wholesalers weight fully commensurate with the demands master plumbers have already begun to make. This applies to cast brass materials as well as tubular goods. Some manufacturers have issued new sheets revising prices and in which have been incorporated the changes that have been made from time to time since the last published sheet. Sheet prices are being strongly maintained in this territory by manufacturers, it is reported. Shipments are made on time.

Range Boilers

The volume of range boiler business that is reaching manufacturers from this territory is satisfactory but not as heavy by any means as it might be at this time. Master plumbers used fairly substantial quantities of range boilers during the period covered by this review. The important feature surrounding this commodity lies in the fact that makers are adhering closely to their price sheets. No difficulty is experienced in getting shipments as they are wanted.

Boilers and Radiators

The pace at which the demand for boilers and radiators has been rising during the past few weeks continues and has put the demand for August well ahead of that for July. Heating contractors manifested a greater buying interest during the last two weeks of the month just past. Practically all commitments involved material for

jobs that are already under contract. Manufacturers have practically all issued new price sheets, the changes in which center around round boilers only. Deliveries have been made promptly.

SOUTHEAST

Sales Continue At Fair Rate—

Demand for plumbing and heating materials for the past two weeks held at a fairly good seasonal rate, according to most sellers interviewed. Most jobbers are showing a good rate of stock turn in practically all lines. New construction projects, the usual barometer of near future business in plumbing and heating, are on the upward move and it is expected that many of these will reach the installation stage shortly.

The continued hot weather has affected materially the heating lines, and the major portion of sales has resulted from re-installation and roughing-in work. A good business was reported by several jobbers in wrought iron pipe and in brass fittings. Pottery and range boilers continued at a slow rate, in most cases. Jobbers are maintaining good working assortments of all commodities. No price changes have been announced in the Atlanta territory in the past fortnight. Manufacturers are shipping supplies with regularity and no delays of any consequence have been reported.

Soil Pipe

Most jobbers interviewed reported that business in soil pipe was moderately fair for the past fortnight, and that the market was firm. Contractors were fairly actively engaged, especially in the opening days of September. Jobbers are maintaining ample supplies to care for the immediate needs of contractors. No price change has been announced and deliveries are made on schedule by manufacturers.

Pipe—Steel and Wrought Iron

Distributors in the Atlanta area stated that business in both steel and wrought iron pipe was fairly good in the past two weeks. Sales in wrought iron pipe continued to increase slightly over the same period of last month. Several large construction projects in this vicinity, it is expected, will soon reach the installation stage. Mills have not changed their price lists and shipments into the territory are made in good time.

Fittings

Stock turnovers in all kinds of fittings were reported to be maintaining a reasonably good rate for this season of the year. Most jobbers are keeping their stocks in good working shape. Consumption of brass fittings has moved up in the experience of several wholesalers. Cast iron and malleable fittings are meeting with fair demand. No price change has been made and factories are shipping promptly.

Enameled Ware

The movement of enameled ware into consumption was reported as only fair for the past fortnight. Several major construction projects that were expected to be ready for installation of fixtures have been slightly delayed, it is reported. Factories are making deliveries without delay, and no change in their prices has been announced.

Pottery

Sales in pottery did not appreciably increase in the past two weeks, and a rather low rate of turnover continues. Most jobbers are maintaining supplies just sufficient to take care of the cur-

The Stock Market

Range for Week Ending August 31, 1929†

Par Value	1929 High	1929 Low		*	Weekly High	Weekly Low	Weekly Close
NP	216¾	95½	Air Reduction Sales Co.	A	216¾	196	214
NP	54½	40⅜	American Rad. & Stand. San. Corp.	A	49	47⅛	47⅝
25	134⅝	106½	American Rolling Mills Co.	A	129⅞	124½	128⅞
50	140	99	Anaconda Copper Mining Co.	A	129	124¼	129
NP	62	35	Bastian-Blessing Co.	C	58	56	58
NP	140¾	82¼	Bethlehem Steel Co., com.	A	139½	134⅝	138¼
100	123¾	116⅝	Bethlehem Steel Co., pfd.	A	123⅜	123	123
NP	55¼	35½	Brunswick-Balke-Collender Co.	A	38	36⅛	38
NP	192⅞	120¼	A. M. Byers Co., com.	A & E	149⅜	130	146½
100	121¼	105	A. M. Byers Co., pfd.	A & E	110	110	110
100	127½	118	Century Electric Co., com.	F	118	118	118
50	4¾	2	Chicago Nipple Mfg. Co., "A"	B	3	3	3
50	1½	1	Chicago Nipple Mfg. Co., "B"	B	1	1	1
25	48	44¾	Crane Co., com.	C	46	46	46
100	119	112	Crane Co., pfd.	C	115	115	115
20	21	16⅛	Eagle-Picher Lead Co.	H	17¼	16¾	16¾
NP	35	14	Fairbanks Co., pfd.	A	26½	25	25
NP	51¾	40⅜	Fairbanks, Morse & Co., com.	A	49⅜	47	49⅜
100	110⅞	106	Fairbanks, Morse & Co., pfd.	A	108¾	108	108¾
NP	20⅛	12	Greenfield Tap & Die Corp.	B	20⅛	19¼	20⅛
NP	38	24¾	Iron Fireman Mfg. Co.	C	36⅜	35½	36⅜
NP	142¾	152½	Johns-Manville Corp., com.	A	204½	193	202
100	123	119	Johns-Manville Corp., pfd.	A	121	121	121
100	122¼	117	Jones & Laughlin, pfd.	A & E	121½	120	121¼
NP	102½	55¾	Minneapolis-Honeywell Reg. Co., com.	B & C	101	101½	101
100	161	142½	Minneapolis-Honeywell Reg. Co., pfd.	B & C	161	161	161
NP	75	48	Modine Mfg. Co.	B & C	69½	68⅞	69½
NP	55½	39	Motor Wheel Corp.	A	52⅞	51½	52⅜
NP	43½	33½	F. E. Myers & Bro. Co., com.	G	43½	40	40
100	105	105	F. E. Myers & Bro. Co., pfd.	G	105	105	105
100	178½	132	National Lead Co., com.	A	178½	150	167
100	141½	138¼	National Lead Co., pfd. "A"	A	140	138½	140
100	122	116	National Lead Co., pfd. "B"	A	116½	116	116½
NP	17	5⅛	National Radiator Corp., com.	A	5⅜	5¼	5⅝
NP	41	12⅝	National Radiator Corp., pfd.	A	15	14	14
5	31	23	Herman Nelson Corp.	B	26½	25⅛	25½
NP	92	80⅛	Ohio Brass Co., "B"	B & G	83½	81	82
NP	54⅞	41	Republic Brass Corp.	A	50	41	50
NP	111	93⅝	Republic Brass Corp., "A"	A	103	101½	103
NP	193⅛	8	Richmond Radiator Co., com.	B	8⅜	8⅜	8⅜
NP	36½	29⅛	Richmond Radiator Co., pfd.	B	30	29⅛	29⅛
NP	44½	26	Ruud Mfg. Co.	C	36	36	36
NP	52¾	34	Spang, Chalfant & Co., com.	A	41⅞	38½	41¼
100	97	89	Spang, Chalfant & Co., pfd.	A	93	93	93
NP	39½	26	Time-O-Stat Controls Co., "A"	C	33¾	33	33½
NP	135⅝	15¼	Union Carbide & Carbon Corp.	A	135	130⅛	134
20	55⅞	26½	U. S. Cast Iron P. & F. Co., com.	A	28½	27	27⅝
NP	19	16⅛	U. S. Cast Iron P. & F. Co., 1st pfd.	A	17	17	17
NP	20	18⅝	U. S. Cast Iron P. & F. Co., 2nd pfd.	A	19¾	19¾	19¾
NP	62¼	43	U. S. Radiator Corp., com.	B & D	50⅛	50	50
100	100	100	U. S. Radiator Corp., pfd.	D	100	100	100
NP	65½	42	U. S. Rubber Co., com.	A	48⅝	45⅞	46½
100	92½	69⅛	U. S. Rubber Co., pfd.	A	73½	69½	70½
100	260½	154	U. S. Steel Corp., com.	A	259⅜	217⅝	256½
100	144¼	139¼	U. S. Steel Corp., pfd.	A	143⅝	141	143⅜
NP	72½	8½	Universal Pipe & Radiator Co.	A	9¼	8½	8¾
NP	42⅞	33⅛	Walworth Co.	A	42½	40⅜	40⅜
NP	35	16½	Wayne Co., com.	B & C	20	20	20
NP	46	30¼	Wayne Co., pfd.	B & C	37	37	37
100	100¼	93	Wheeling Steel Corp., com.	B	95½	95¼	95½
100	135½	131½	Wheeling Steel Corp., pfd. "A"	B	133	133	133
NP	29¾	14½	Williams Oil-O-Matic Htg. Corp.	C	18¾	18	18½
NP	173	105	Youngstown Sheet & Tube Co.	A	173	165	170

*Where listed—

A—New York Stock Exchange
B—New York Curb Exchange
C—Chicago Stock Exchange
D—Detroit Stock Exchange
E—Pittsburgh Stock Exchange
F—St. Louis Stock Exchange
G—Cleveland Stock Exchange
H—Cincinnati Stock Exchange

†If there is no trading during current week, range represents last week recorded.

rent needs of contractors. No price change developed and potters are delivering with promptness.

Plumbers' Brass Goods

A slight increase in demand for plumbers' brass goods was reported by several sellers. While sales in some cases are better than last month, the majority of jobbers state that business is not establishing the level of this time last year. Tubular brass goods sales were reported as fairly good. Dealers' stocks are of sufficient size to care for the current needs of contractors. Makers have reported no change in prices and shipments are made promptly.

Range Boilers

Business in range boilers showed a slight increase in some instances and in others a decrease, resulting in a rather sporadic week from a sales standpoint. Jobbers' stocks are of average size and makers are shipping promptly.

Boilers and Radiators

Due to the continued hot weather and the delays in completion of construction projects, sales in boilers and radiators maintained only an average pace, but it is expected that the fall season will soon quicken sales. Makers are shipping promptly and have not changed prices.

PACIFIC COAST

Volume of Consumption Is Fair—

Coast business continues to be fairly active with demand for materials varying in the different sections and new construction work more plentiful in some districts than in others. Jobbers, generally, are carrying stocks of merchandise sufficient to insure prompt shipment of all orders received but at the same time they are keeping their stocks at a minimum. Distributors' prices to the trade vary somewhat in the different jobbing centers.

Soil Pipe

Soil pipe is moving in a moderate volume at present with most of the demand being in small lots for immediate consumption and very little if any inquiries out for future requirements. Distributors are carrying stocks sufficient to take care of the trade's needs as they arise and are replacing their stocks in about the same volume as sales. Prices by all concerned remain unchanged since our last report.

Pipe—Steel and Wrought Iron

A seasonable demand for both steel and wrought iron pipe continues, which shows little variance from week to week. Distributors are carrying stocks sufficient to insure the immediate shipment of all of the trade's requirements as they arise and are keeping their stocks at this point by constant receipts of tonnage from the mills, which are delivering quickly. Prices remain unchanged.

Fittings

Little change has been noted in the last fortnight in the demand for fittings which continues to be of moderate nature, most orders received being for small lots for immediate requirements. Distributors are carrying stocks sufficient to fill all orders without delay and are replenishing their stocks in about the same volume as sales. Shipments from manufacturing sources are being made promptly.

Enameled Ware

A steady although not heavy demand continues for enameled ware, which shows little variance from week to week. Distributors generally have well balanced stocks and coast manufacturing plants and manufacturers' warehouses are in a position to make prompt shipment of all classes of ware. Jobbers' prices to the trade are based on present replacement costs and are unchanged.

Pottery

The demand for pottery during the past two weeks has not shown any appreciable change from that of previous weeks and, on the whole, may be said to be fair. Distributors generally are carrying stocks sufficient to fill all the trade's present needs without delay and they are able to secure early delivery on all classes of ware from coast potteries. Distributors' prices to the trade are based on present replacement costs and remain unchanged.

Plumbers' Brass Goods

The demand for plumbers' brass goods continues to hold somewhat above the average.

Distributors are carrying stock sufficient to make prompt deliveries and jobbers in turn can secure prompt shipment from all manufacturing sources. Distributors' prices to the trade vary in the different jobbing centers and are more firm in some than in others.

Range Boilers

A steady although not heavy de- the movement of boilers into consumption varies little from one week to the next. Jobbers are carrying stocks sufficient to fill all orders promptly and are reordering in about the same volume as sales. Prices remain unchanged.

The Metal Market

	Sept. 3	Average July, 1929	Average May, 1929	Average 1928
PIG IRON—				
No. 2 foundry, Chicago	$20.00	$20.00	$20.00	$18.54
PLATES AND SHEETS—				
Steel boiler plates, Pittsburgh, per lb.	1.95c	1.95c	1.95c	1.87c
*Blue annealed sheets, No. 13, Pittsburgh, per lb.	2.35c	2.35c	2.20c	2.03c
Black sheets, No. 24, Pittsburgh, per lb.	2.85c	2.85c	2.95c	2.75c
TIN—				
Straits tin	47½c			
LEAD—				
Chicago	6.50c			

The Old Metal Market

Dealers' Buying Prices

	Per lb.		Per lb.
Aluminum clippings	18 c	Copper, light	13½c
Block tin	42½c	Copper, uncrucibled wire	15¼c
Brass, light	8½c	Faucets and valves	10 c
Brass, heavy mixed	9½c	Lead, heavy	5.55c
Brass, red	13 c	Solder Joints	8¾c
Copper, crucible	15¾c		

NOTE: Prices are those quoted on Tuesday of this week.
*Comparisons are with old blue annealed base, No. 16.

◆

Announces Earnings for First Six Months—

The Universal Pipe & Radiator Co., New York City, reports that its net earnings for the second quarter ending June 30, 1929, after all deductions, including depreciation, debenture bond interest, Federal taxes, etc., amount to $115,241.46. This compares with $10,622.76 earned for the first quarter, making a total net earnings for the first six months of this year of $125,864.22.

New York City Heating Contractors Establish Quantity Survey Bureau

(Prepared by Heating and Piping Contractors New York City Association)

The Heating and Piping Contractors New York City Association is one of the oldest and most conservative trade associations in the country. It was organized in October, 1885, and has been in operation without a lapse for more than 43 years. During that time, it has been recognized as representing concerns in the heating contracting business whose work followed the latest and best technical practice.

In common with other progressive elements in the heating industry, this association has recognized the fact that the ills of the industry were caused by no one group but rather that each group contributed its share of the sum of bad practices and to correct the situation each must in turn do its share in cleaning its own house.

This association has now inaugurated three important steps in association activity which will be far reaching in their beneficial effects within the industry.

The first step was the organization and operation within the association of a quantity survey bureau for the purpose of providing the contractors with uniform interpretation of specifications and list of material required to meet the specified requirements.

This activity has nothing whatever to do with prices in any form: it deals only in quantity and type of materials so that the contractor knows exactly what is required and can price the work intelligently.

The process of taking off material in this way reduces the chance of error of either too much or too little material being figured upon and eliminates to a large extent the duplication of effort and its expense, where each of the contractors figuring a job, do exactly the same thing.

Under the old conditions an owner paid not only for the cost of estimating his own construction but for the jobs lost by his contractor because it costs money to estimate a job whether he gets it or not and that cost is reflected in his overhead expense.

With the quantity survey bureau, the cost of giving the quantities is billed to the contractors and charged on his estimate sheet as an item of direct cost the same as any material required. Each contractor is charging the owner for the cost of estimating his work only and the successful contractor pays the bill to the association.

Eventually as the overlapping expenses disappear, this process will result in great economies to the industry and be a source of great satisfaction to owners, architects and engineers.

The next step was the adoption of the code of standards created by the Heating and Piping Contractors National Association.

These standards are the result of many years of research work by the National association and refer to boiler sizes, pipe sizes, and radiator sizes which have proved to be adequate in all sections of the country so that, where these standards are used the heating plant will perform its function adequately.

Beginning Aug. 1, 1929, the plans for jobs to be done by a contractor who is a member of the New York City Association will be checked at the association headquarters against these standards and as the work progresses the association inspects the installation to see that the approved plans are actually carried out.

On residence construction up to and including six (6) stories in height and business construction up to and including ten (10) stories in height, the National association's plan of certified heating will be applied. For these buildings, the same standards will be used and the work will not only be checked and inspected but in addition, a certificate will be issued to the owner and the work itself will be so marked, to establish the fact that the New York City association as a group accepts responsibility for the adequacy of the heating system.

This means that the owner gets exactly what he contracted for at no additional expense and no argument about it.

The New York City association expresses the hope that owners, architects, consulting engineers and general contractors will recognize the value of these important steps in protecting the public against bad work and all the troubles that result from it and will co-operate by requiring that these facilities be used in all their work.

The association headquarters are at 50 Union Square East, New York City, William E. Taylor, executive secretary.

◆

Large Classes Qualify at S. F. Trade School

At the plumbing school conducted by the San Francisco Industrial Association at 1120 Howard street, San Francisco, Calif., examinations have just been concluded covering the work of the past term which officially closed on July 12. These examinations were in progress for something like three weeks. As a result, 70 young men—apprentices, junior mechanics and journeymen—have been classified to the entire satisfaction of those in charge.

In addition to those living in San Francisco, students have been attending from points down the peninsula as far as San Jose, and from Oakland, Berkeley, Richmond and other trans-bay sections. Classes are conducted at night and are attended only by those actively employed in plumbing shops.

Immediately upon the close of the last term, on July 12, a new school term was opened with a total enrollment of 74.

A feature of the work to be undertaken at the school during the coming term will be the installation of a model bathroom, laundry and kitchen. This work will be carried through under conditions identical with those encountered in high class residential jobs. These installations will be made in the building where the school is located, and have been made possible largely through the cooperation of the Standard Sanitary Mfg. Co., Pittsburgh, Pa., which donated

for the purpose a toilet with tank and seat, a pedestal basin, laundry tray and kitchen sink. Kohler Co., Kohler, Wis., supplied a bathtub, and the W. S. Ray Mfg. Co., San Francisco, a 50-gallon automatic storage water heater.

Instructor J. C. Staudinger is directly in charge of the school. For upward of twenty years Mr. Staudinger has been prominently identified with the plumbing and heating industry in San Francisco, and has been in charge of the school ever since its inception four years ago. Following the recent resignation of Harold R. Pierce as director of training and research for the Industrial Association of San Francisco, William Storey was appointed in his stead.

◆

Ross Dudley, secretary of the Salt Lake City and Utah State Associations of Sanitary and Heating Engineers, is now enjoying a vacation trip to southern Utah. During his absence Curtis Evans, son of Ralph D. Evans, past president of the Salt Lake City organization, is acting as secretary of that association.

Obituary

James F. Conran Called by Death

James F. Conran, formerly general manager of sales of the Standard Sanitary Mfg. Co. of Pittsburgh, Pa., died Friday, August 30, at Poland Springs, Me., of a heart attack, in his 68th year. He retired from business about 12 years ago. His sister and a niece survive him.

Wm. B. Conover

William B. Conover, secretary and treasurer of Lambertville Pottery Co., Lambertville, N. J., died Tuesday, August 20, at his home in that city, according to formal announcement just received from this concern.

William Evans

William Evans of Dallas, Tex., for many years representative in Texas territory for the Sloan Valve Co. of Chicago, died last week at Rochester, Minn., where he had gone for a minor complaint, which developed into pneumonia. Mr. Evans had a large circle of friends and acquaintances in the Southwest and in Texas, who will receive the news of his death with regret.

William Evans

L. B. Brickenstein

Laurence Bagge Brickenstein, who has been engaged in the plumbing business in Winston-Salem, N. C., about 40 years, died in a hospital in that city on Tuesday, August 27, following an illness of five days. Mr. Brickenstein underwent an operation for appendicitis Friday, August 23, and appeared to be getting along splendidly until he experienced a heart attack which resulted in his death. He was born at Bethlehem, Pa., December 13, 1867, the son of a minister. He was educated at Litiz, Pa., and at New York Trade School. He went to Winston-Salem about forty years ago and entered the plumbing business which he continued to operate until his death. Mr. Brickenstein was an active member of Home Moravian Church and had been a member of the choir for many years. He is survived by his widow and four grandchildren.

Lewis Tobey

Lewis Tobey, well known master plumber of Winthrop, N. Y., died at his home in that city on July 31 following a sunstroke suffered a few days previous. Mr. Tobey was born in Malone, N. Y., but had lived in Winthrop the greater part of his life. Surviving are his wife and four children.

Clinton T. Hayes

Clinton T. Hayes, treasurer of Hayes Brothers, Inc., contractors and engineers, Indianapolis, Ind., died in that city on August 19, in his 56th year. Mr. Hayes was apprenticed to the trade at an early age and worked thirty-eight years continuously at the plumbing business.

Over thirty years ago he formed a partnership with his brothers, Frank J. and Joseph G. Hayes, who at the time were journeymen steamfitters and plumbers. In 1903 the partnership was changed to a corporation. Frank J. Hayes died in 1919 and Joseph G. Hayes, who is now the only surviving member of the original partnership, is president of the corporation.

E. L. Klenke

E. L. Klenke, a master plumber of Memphis, Tenn., died suddenly of uremic poisoning on Sunday morning, August 11, at Vicksburg, Miss., while returning to his home following a week's vacation. Mr. Klenke was born in Memphis and was a member of the Memphis Association of Master Plumbers. He was a member of the Angerona Lodge of Masons, Mazda Grotto and a Shriner. He was also a member of the American Legion, having served thirteen months overseas during the world war. Mr. Klenke is survived by his widow, Mrs. Clara Tanner Klenke, his parents, five sisters and two brothers, all of Memphis. Masonic services were held at the grave.

Edward J. Nolan

Edward J. Nolan, one of the oldest master plumbers in Cincinnati, Ohio, died at his home in that city on August 24, following an illness of several months. He was in his seventy-third year. Mr. Nolan served his apprenticeship with the late Thomas Gibson, one of the first plumbers in the United States, and then entered business for himself.

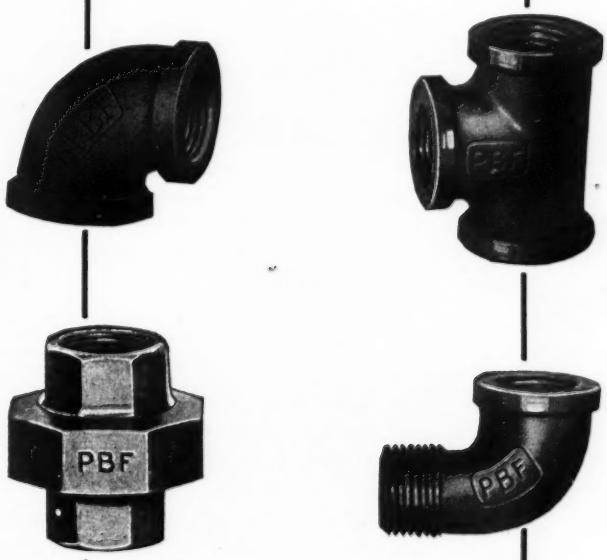
Mr. Nolan was an active association worker, having served as president of the Ohio State Association of Master Plumbers. He was also a life member of the Cincinnati association. One of his first large plumbing contracts in Cincinnati was the present city hall, and one of the latest the new Masonic Temple. He was a member of the Knights of Columbus and was also active in a number of civic organizations. He is survived by his widow and three sons.

◆

Fresno, Calif.—Ralph Paul has opened a plumbing and heating establishment at M and Ventura streets.

PHOENIX BRASS FITTINGS

Every Fitting
Air Tested
Under Water



PHOENIX BRASS FITTINGS CORP.
IRVINGTON, NEW JERSEY

Convention Dates

September 9 to 13, 1929.—The fall meeting of the American Welding Society, to be held at Cleveland, Ohio, with headquarters at the Hotel Statler.

September 21, 1929.—UTAH—The semi-annual convention of the Utah State Association of Sanitary and Heating Engineers, to be held at Salt Lake City.

March 10, 11 and 12, 1930.—INDIANA—The thirty-fourth annual convention of the Indiana Society of Sanitary Engineers, to be held at Fort Wayne.

May 5 and 6, 1930.—FLORIDA—The ninth annual convention of the Florida State Association of Master Plumbers and Heating Dealers, Inc., to be held at Bradenton.

COMING TRADE EVENTS

September 7, 1929.—The third annual outing of the Eastern Long Island Master Plumbers and Steamfitters Association of Suffolk County, to be held at Worthwhile Lodge on the Sound, Peconic, Long Island, N. Y.

September 7, 1929.—The joint outing of the Rhode Island State Association of Master Plumbers and the Providence Master Plumbers' Association, to be held at Jim Smith's Inn, Lakewood.

September 7, 1929.—The annual outing of the Nassau County Master Plumbers Association, to be held at Narragansett Inn, Lindenhurst, N. Y.

September 7, 1929.—The annual outing of the Master Plumbers' Association of Jersey City, N. J., to be held at Blasberg's Farm, Hawthorne, N. J.

September 13, 1929.—The September meet of the Western Trade Golf Association, to be held at the Glen Oak Country Club.

September 14, 1929.—The annual outing of the Master Plumbers Association of Newark, N. J., to be held at Klein's Grove, Oakland, N. J.

September 17, 1929.—The September meet of the Metropolitan Trade Golf Association, to be held at the Pelham Country Club, Pelham Manor, N. Y.

September 18, 1929.—The September meet of the Heating and Ventilating Golf Association of Philadelphia, to be held at the St. David's Country Club, Wayne, Pa.

September 18, 1929.—The annual outing of the Bronx Branch of the Master Plumbers Association of Greater New York, to be held at Karatsonyi's Glenwood Landing, Long Island, N. Y.

September 24, 1929.—The September meet of the Eastern Trade Golf Association, to be held at the Fox Hills Golf Club, Stapleton, S. I., N. Y.

October 4, 1929.—The last meet of the year of the Western Trade Golf Association, to be held at the Calumet Country Club.

October 7, 1929.—The first Fall dinner and dance of the Portland, Me., Master Plumbers' Association, to be held in that city.

October 16, 1929.—The October meet of the Heating and Ventilating Golf Association of Philadelphia, to be held at the Cedarbrook Country Club.

October 17, 1929.—The October meet of the Metropolitan Trade Golf Association, to be held at the Westchester-Biltmore Country Club, Rye, N. Y.

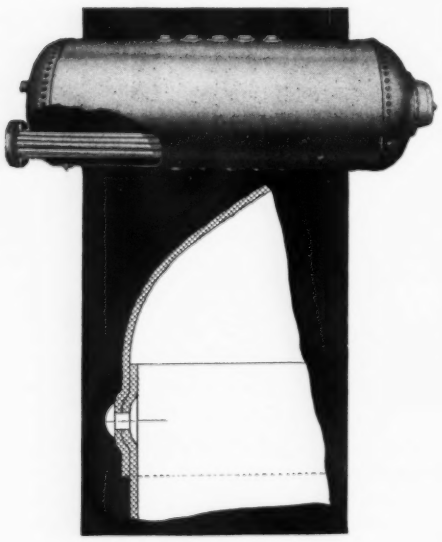
January 27, 28, 29, 30 and 31, 1930.—The International Heating and Ventilating Exposition, to be held at the Commercial Museum, Philadelphia, Pa.

◆

John A. Odin, Salt Lake City, Utah, master plumber, and his wife left recently for a month's trip to the Pacific northwest.

H. B. Seckinger, master plumber of Atlanta, Ga., has recovered from his recent illness and is now back at work. The many friends of Mr. Seckinger in the trade will be glad to learn of his recovery.

Future Service Justifies Your Choice of Badger Tanks



NO reputable contractor can select a hot water storage tank, install it, and then go on his way to the next job caring little about the service the tank is going to give.

Of course, he cares. He wants the job to be a credit to him. The selection of the tank, then, is all-important. These features of Badger Storage Tanks, in particular, reflect the soundness of the contractor's judgement:

1) Badger Tanks are all copper tanks – shell, heating units and connections.

This makes the tank rustproof.

2) During riveting, the copper is drawset, the rivets upset and buttoned. The longitudinal seam is carefully brazed, the seam joining the shell and heads is thoroughly sweat and soldered.

This makes the tanks leakproof.

The future service given by Badger All-Copper Tanks will justify your choice in selecting them.

E. B. BADGER & SONS COMPANY

65 PITTS ST., BOSTON, MASS.

New York, N. Y., 271 Madison Ave.
Syracuse, N. Y., 404 S. Clinton St.
Minneapolis, Minn., 716 Build. Exch.
Charlotte, N. C., 1408 Realty Bldg.
Denver, Colo., 414 W. Colfax Ave.
Chicago, Ill., 2831 S. Parkway
Cleveland, Ohio, Guardian Bldg.
Cincinnati, Ohio, Union Trust Bldg.
Atlanta, Ga., Red Rock Bldg.
Salt Lake City, Utah, Kearns Bldg.
Philadelphia, Pa., 1500 Walnut St.
Detroit, Mich., 1728 Ford Bldg.
St. Louis, Mo., 3605 Laclede Ave.
Houston, Tex., 1308 Sec. Nat. Bk. Bldg.
San Francisco, Cal., Sharon Bldg.
Pittsburgh, Pa., Union Trust Bldg.
Montreal, Que., Can. Cement Bldg.
Los Angeles, Cal., Hollingsworth Bldg.
Portland, Ore. 1000 Buyers Bldg.
Seattle, Wash., 415 Lenora St.

COMPLETE AUTOMATIC CONTROL

Don't Overlook This New MYERS FEATURE

A water system functions every day of the year. No Sundays, no holidays, no rest days for it. Year through it serves. Obviously, dependability is highly essential, and automatic control is very desirable. Maximum service, minimum cost, customer satisfaction, more business, more profits. Self-starting, self-stopping, self-oiling, complete automatic control. All are responsible for the pronounced success of Myers Self-Oiling Automatic Water Systems. Do not underestimate the value of these important Myers talking points and exclusive features. Get all of the facts. Get them today. Write or wire for a copy of our new catalog and prices.

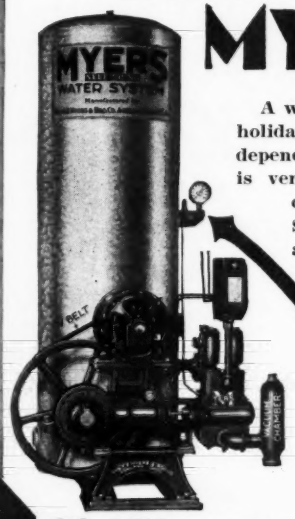


FIG. 2510

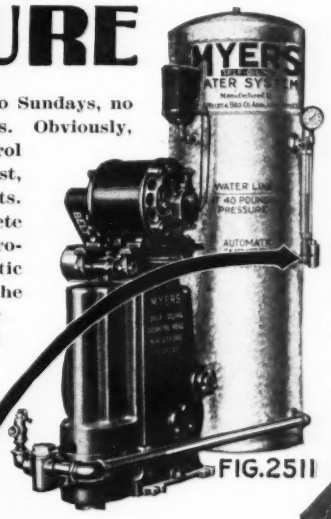


FIG.2511

Complete Automatic Air Volume Control

Air Bound or Water Logged Tanks Eliminated

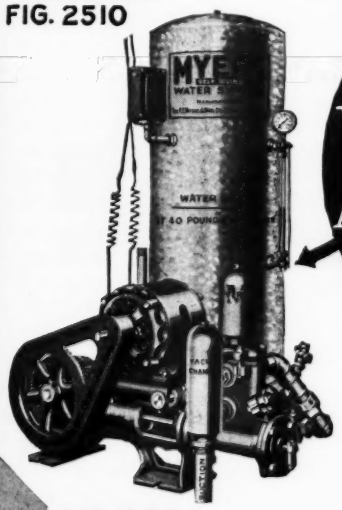


FIG.2354

When it comes to unlimited water system sales activities the Myers Line leads the way. Homes, farms, country estates, public and private buildings and institutions—Myers Water Systems serve them all successfully. There is a style and size for any service up to ten thousand gallons of water per hour.

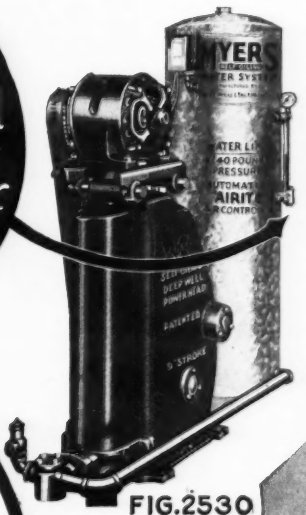


FIG.2530

Shallow or deep wells, large or small volume, engine or motor, belt or chain drive, open or protected installations, pressure tank, open tank or direct discharge — regardless of volume, power, depth or place, Myers Water Systems meet most conditions satisfactorily.

FIG. 2524

THE F.E.MYERS & BRO. CO.
ASHLAND, OHIO.

PUMPS FOR EVERY PURPOSE - WATER SYSTEMS - HAY TOOLS - DOOR HANGERS

WATTS
type 38
HOT WATER ~ HOUSE HEATING UNIT

There are good reasons why the Watts Type 38 Hot Water House Heating Unit is SAFE—ECONOMICAL—and EFFICIENT.

Once on the line, it increases the speed of circulation which means quick heat. Quick heat means savings in fuel. It makes the system safe because it not only automatically regulates the required amount of make-up water but also the pressure. It is efficient because of its large water way which allows quicker filling of the system. It is simple and easy to understand—easy to install.

Make Hot Water Heating jobs a new source of profit. Use The Watts Type 38 on every job.

WRITE FOR COMPLETE CATALOG.

Watts Regulator Company
Lawrence—Mass. Est. 1874

John G. Kelly, Inc., Sales Associates for the United States and Canada, 210 East 45th St., New York City, N. Y.; Geo. E. Kitson Co., Philadelphia Representative, 5939 Haverford Ave., Phila., Pa.; Johnnie Moore, Chicago Representative, 1020 Lawrence Avenue, Chicago.

SUPPLY NEWS

AMONG MANUFACTURERS, WHOLESALERS AND SALESMEN

Planning Consolidation of Wholesale Houses on Atlantic Seaboard

An effort is being put forth to bring about a consolidation of some of the wholesale houses along the Atlantic seaboard. The movement, details of which are not as yet fully developed, is being sponsored by A. Mertzanoff, formerly an official of the American Radiator Co. Mr. Mertzanoff, who is a capitalist, has offices at 3022 New York Central Building, New York City. A number of the larger distributors of plumbing and heating supplies have been approached with the plan, some of whom have taken the first necessary step toward the merger which includes the filing of a financial statement with a New York law firm. With the filing of this information the wholesaler is given a receipt stating that the figures will be held in strictest confidence pending the outcome of the application for participation in the project. Efforts are now being directed toward getting a sufficient number of jobbers to file their intentions, whose combined annual business is broad enough to control a large percentage of the sales in the eastern section of the country. Wholesalers taken into the merger are to be given in addition to a limited cash consideration proportionate blocks of stock in the corporation, to which no name has yet been given.

◆

Final Action on Trade Practice Rules Expected September 16

Final action by the Federal Trade Commission on the trade practice rules adopted by the manufacturing and wholesale division of the plumbing and heating industry at Pittsburgh, Pa., on May 15, is expected by September 15. The commission reconvened on September 3 after having been on vacation since July 3.

Hon. M. Markham Flannery, director, trade practice conference division, of the Federal Trade Commission, has recommended several changes in the rules as adopted at the Pittsburgh meeting and has turned his recommendations over to F. W. Swanson of Des Moines, Ia., president of the Central Supply Association and chairman of the National Trade Practice Conference Committee. Mr. Swanson, in turn, submitted Mr. Flannery's recommendations to the members of the committee for their approval, and 25 of the 28 committee members have approved the recommendations and their approval has now been filed with Mr. Flannery for action by the commission.

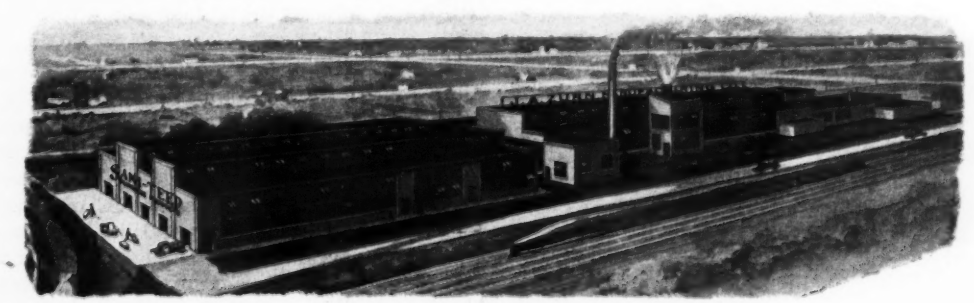
The National Trade Practice Conference Committee is composed of the Trade Practice Conference Committees of the Eastern Supply Association, Central Supply Association, National Pipe & Supplies Association and Western Supply Association and, by resolution at the Pittsburgh meeting, was empowered to approve or disapprove any changes or modifications recommended by the Federal Trade Commission in the resolutions adopted at this meeting.

◆

The New Plant of the J. A. Zurn Mfg. Co.

The J. A. Zurn Mfg. Co. of Erie, Pa., manufacturer of traps, drains and fittings, has recently started operations in its new and large plant in that city which was completed a few weeks ago, as mentioned briefly in these columns at that time. The accompanying cut shows a bird's-eye view of this plant, which covers four acres and is located on a fifteen-acre plot of land which the company owns. It consists of a pattern shop, core room, iron foundry, galvanizing plant, machine shop and stock room all modernly equipped and all under one roof, and plans have already been made for the addition of a brass foundry. The arrangement of these various shops has been made in such a careful manner that the raw material enters the plant at one end and travels practically in a straight line through all the various processes until it is the finished product at the other end.

The new plant is served by four railroads and by steamers on the Great Lakes, on which Erie is located, as well as by convenient trucking facilities,



The new plant of the J. A. Zurn Mfg. Co., at Erie, Pa.

and an airplane landing field is included in the company's plans for the future.

The company was founded in 1902 by John A. Zurn and was originally known as the Advance Mfg. Co. It was started with a floor space of 300 sq. ft. but grew every year. In 1917, an iron foundry was purchased in Girard, Pa., and in 1919, a brass foundry was annexed. In 1928 the J. A. Zurn Mfg. Co. was incorporated with the following officers: John A. Zurn, president and treasurer; M. A. Zurn, vice president and general manager, and E. F. Zurn, secretary.

The company maintains a warehouse in Chicago and has branch offices and sales offices in many of the leading cities in United States, and it is also represented in Canada and Porto Rico.

◆

Kohler Co. Holds Annual Field Day

Kohler Co. of Kohler, Wis., held its eleventh annual field day on Saturday, August 10 with more than 15,000 persons taking part in the day's program, including members of the organization and their families and invited guests. The activities were centered in Ravine Park in Kohler village, where an afternoon concert was presented by the Kohler junior band, composed of 40 boys and girls, and an evening concert by the senior band.

Walter J. Kohler, governor of Wisconsin and president of the company, was present and addressed the gathering. Included on the program were vaudeville, dancing, stunt and formation flying, a wide range of athletic contests and games, a baseball game, a soccer football game, a tennis tournament, a horseshoe pitching tournament, refreshments, exhibits, a merry-go-round, riding ponies, toy balloon races and other entertainment features especially for children.

A general view of the Kohler "nature theater" which was the center of activities for the Kohler Co.'s 1929 field day, which was attended by more than 15,000 persons

◆

Reorganizes Sales Force

Bryan Boilers, Inc., 249 High street, Newark, N. J., handling the boilers manufactured by the Bryan Steam Corp., of Peru, Ind., has reorganized its sales force through the purchase of an interest in the business by William E. Krueger, who for the past few years has represented the Burnham Boiler Corp. Mr. Krueger has been elected treasurer of the company as well as a director and has assumed the duties of sales manager.

Under Mr. Krueger's direction William Cooper is covering the Camden-Trenton, N. J., territory; E. M. Robinson that of Newark and Essex County, N. J., and J. H. Werner the New Brunswick, N. J., area.

Erwin Kramer, who has held the office of president and treasurer of the company, has resigned as treasurer to make room for Mr. Krueger but continues as president and general manager.

Mr. Krueger is a past president of the New Jersey Chapter of the National Association of Plumbing and Heating Salesmen and a past secretary of the national organization. Both Mr. Cooper and Mr. Robinson are prominently identified with the chapter and national association, the former being a past secretary of both and the latter the present president of the chapter.

◆

Peirce, Fair & Co. Now Control Ray Burner Co.

The operating control of the Ray Burner Co., San Francisco, Calif., formerly the W. S. Ray Manufacturing Co., has been secured by Peirce, Fair & Co. of that city.

The W. S. Ray Manufacturing Co. is one of the Pacific coast's oldest manufacturing enterprises. It was founded in 1872 for the purpose of manufacturing ship's supplies. Its marine galley range, originally designed for burning wood, coal or coke, was one of the first heating units to be adapted to liquid fuel. The company's oil burner, for industrial, commercial and domestic use, is the result of this original research and experiment.

Under the new management, an expansion is contemplated to give improved manufacturing facilities in a new plant.

◆

Plans New Building

The Connecticut Plumbing Supply Co., Stamford, Conn., is having plans prepared by Architect Eugene J. Tardiff for a new office and warehouse building on Chapel street. It will be of brick and steel construction 45x50 feet and two stories high.

◆

Appoints New Representatives

The Sundstrand Engineering Co., Rockford, Ill., has appointed G. B. Long as its district sales manager in Northern Indiana and the state of Michigan. Mr. Long was formerly in charge of the oil burner department of the Struble Leach Co. of Youngstown, Ohio. C. D. Kuck, formerly Illinois representative for the Goodyear Tire & Rubber Co., has been appointed district representative for the Sundstrand Engineering Co. in Illinois and Iowa.

Increase in Common Stock Authorized

An increase in the number of common shares of the Youngstown Sheet and Tube Co. stock from 1,000,000 to 2,000,000 shares has recently been authorized by the stockholders of that company. A part of the increased stock, 200,000 shares, will be required for payment of a 20 per cent common stock dividend. The unissued common will be held in the treasury.

◆

Pittsburgh Bureau Members Meet

The representatives of the Plumbing and Heating Industries Bureau's members in the city of Pittsburgh, Pa., were called together by the bureau's representative, D. C. Lindsay, for a luncheon meeting at the Keystone Athletic Club on Wednesday, August 14.

The purpose of the meeting, as outlined by Mr. Lindsay, was to acquaint the members with the work that has been done in the district during the seventeen months which he has been located there. Mr. Lindsay made a complete report of his work and went over in detail the retail outlet survey which he had made.

The members of the bureau expressed their interest and appreciation for the work that had been done in Pittsburgh and a number commented on the results already apparent in the territory. A motion was passed that a letter be sent the bureau expressing their gratitude for the work done by Mr. Lindsay.

Among those present were: Howard A. Bowman of the American Radiator Co., A. N. French of Kohler Co., John F. Bailey of Anchor Sanitary Co., C. B. Nash of Standard Sanitary Mfg. Co., J. A. Malone of the Malone Plumbing Supply Co., W. B. Bryar of Bailey-Farrell Mfg. Co., Robert E. West of Crist & Schilkin Co., John M. Denney of National Tube Co., G. B. Cushing and Harry R. Rowland of A. M. Byers Co., R. Payne Wettstein of DOMESTIC ENGINEERING, Francis Woocester of Spang-Chalfant Co., and Frank F. Corby of Jones & Laughlin Steel Corp.

◆

S. T. Johnson Co. Appoints Representatives

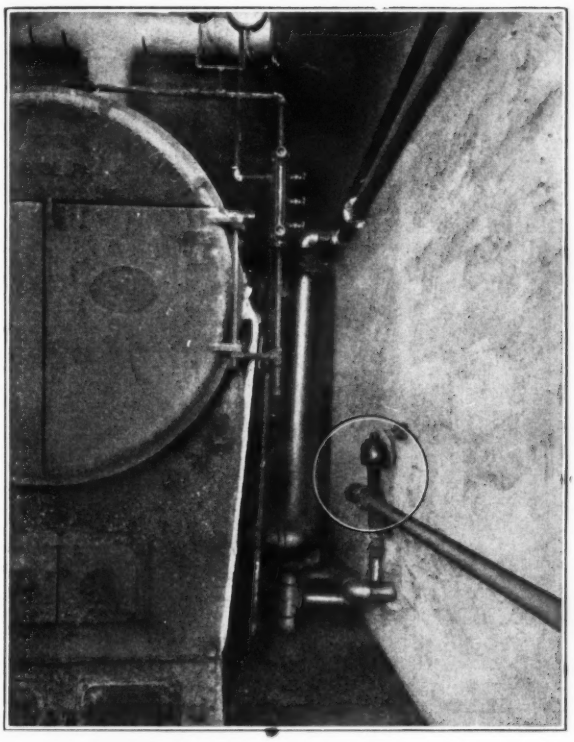
The S. T. Johnson Co. of Oakland, Calif., manufacturer of oil-burning equipment, has just appointed the following representatives in their respective territories: Silent Automatic Oil Burner Co., York, Pa.; Arthur Smidli, Medford, Oregon; Ponder Bros., Tacoma, Wash.; Keim & McDaries, Syracuse, N. Y.; F. A. Menth, Susanville, Calif., and H. B. McCarten, Dubuque, Iowa.

◆

New England Trade Golfers Meet

The New England Heating Trade Golf Association held its August meet on Monday, August 12, at the Winchester Country Club, Winchester, Mass. Winchester is one of those difficult but beautiful courses, and one that all the members looked forward to playing each year. The course is extremely heavily trapped and the niblick was a much used club. However, everyone enjoyed a fine day of golf and 47 hungry members and guests sat down for dinner that evening.

Low gross was won by E. T. Keefe, who received a set of thermos bottles. First low net was won by



For ALL Kinds of Circulation Troubles — — — — — the HYDROLATOR

1. Sluggishness

The HYDROLATOR completely eliminates sluggish circulation on any hot water heating or domestic supply system. It overcomes traps, under-sized pipes and other impediments to circulation.

ASSURES POSITIVE CIRCULATION

The HYDROLATOR forces water through a balanced 2-pipe hot water system several times faster than ordinary thermal flow. By means of a patented exclusive check-valve located in the pipe section of the HYDROLATOR this device secures a sufficient difference in pressure between the inlet and outlet sides to overcome restrictions.

FOR "SICK" HOT WATER JOBS

Now is the time of year when you can do a large and profitable HYDROLATOR business curing "sick" hot water systems—getting them ready for winter.

Write for Bulletin 729-H

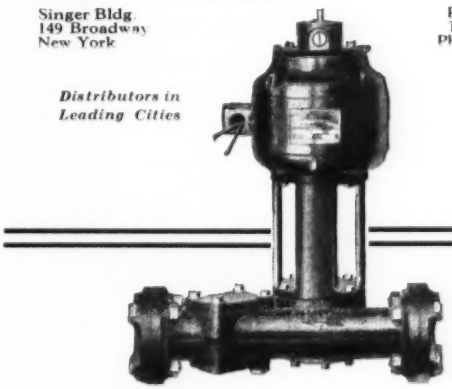
JANETTE MANUFACTURING COMPANY

558-60 West Monroe Street -:- Chicago

Singer Bldg.
149 Broadway
New York

Real Estate
Trust Bldg.
Philadelphia

Distributors in Leading Cities



"FLUSH-KLEEN"

(Sewage Ejector)

Rags-Sticks-Paper Cannot Clog a "Flush-Kleen"

SEWAGE NEVER TOUCHES THE IMPELLER

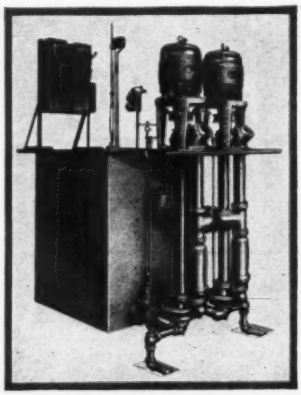


Fig. 2046—Duplex, Dry Basin "Flush-Kleen" Sewage Ejector

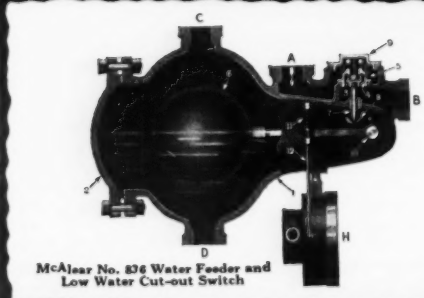
The "Flush-Kleen" Sewage Ejector will discharge larger and heavier materials than any other ejector of similar size and horse power, and will pump into sewer anything passing into basin through *sanitary* lines.

Ask for Bulletin 135. Representatives in principal cities.

CHICAGO PUMP COMPANY

SEWAGE-CONDENSATION-CIRCULATING BILGE-FIRE-HOUSE-VACUUM

2322 Wolfram St., Chicago Phone Brunswick 4110



McAlear No. 836 Water Feeder and Low Water Cut-out Switch

ATTENTION OIL BURNER DEALERS!

Only with the McALEAR Combination Water Feeder and Low Water Cut-Out Switch can you be assured against damage and loss caused by low water.

If you are not on our mailing list write for special sales and literature today.

CHICAGO THE McALEAR MFG. CO. ILLINOIS

Branches in Principal Cities 1901-7 South Western Avenue

Robert Robertson, Jr., who received a silver engraved pitcher. Second low net was won by Charles L. Rose, who received a golf bag. Third low net went to Z. R. Graves, who received a pair of golf shoes. Fourth low net was won by A. C. Bartlett, who received a golf bag. Fifth low net was won by F. C. Scott who received some golf balls. J. S. Webb, and C. S. Bastwick were each given a golf club, and A. T. Papineau of Domestic Engineering received a ball marker.

The scores for the day were as follows:

	G.	H.	N.
F. E. Scott	102	26	76
J. J. Driscoll	110	30	80
Ward Hillman	101	14	87
J. J. Milliken	109	26	73
W. P. Buckanan	106	29	77
W. Haleson	105	28	77
W. S. Cousens	114	24	90
J. F. Dwyer	106	27	79
A. T. Papineau	91	15	76
Z. T. Tierney	122	32	90
T. O'Callaghan	112	30	82
Geo. O'Callaghan.	No Card		
M. R. Grover	114	36	78
H. A. Blackhall	118	30	88
L. R. Graves	97	24	73
Robert Scott	104	..	..
F. D. Ingals	118	26	92
P. R. Williams	111	30	81
Geo. Priggen	102	22	80
J. G. Ross	93	16	77
G. H. Grassee	94	..	..
H. H. Buse	112	..	..
I. V. McClean	117	27	90
C. Flint	101	15	86
A. A. Klowner	91	14	77
F. C. Scofield	123	34	89
Wm. Stearns	105	16	89
W. M. Tuttle	95	24	71
R. Robertson, Jr.	105	36	69
A. C. Bartlett	95	20	75
C. R. Childs	96	14	82
Fred. Pierce	99	21	78
T. P. Gilmore	110	32	78
J. S. Webb	116	40	76
R. S. Franklin	104	16	88
F. N. Moorehead.	92	20	72
H. Coonly, Jr..	Low Gross		81
C. R. Rose	110	40	70
H. H. Chaplin	120	..	..
E. T. Keefe	84	8	76
D. H. Boyden	96	14	82
H. H. Lynch	93	16	77
Geo. Elliott	99	22	77
J. F. Tuttle	99	11	88
N. N. Dawes	111	24	87
C. D. Bostwick	92	16	76
C. W. Smith	111	..	..

◆

Western Trade Beats Michigan in Annual Inter-Association Golf Match

The Western Trade Golf Association of Chicago won permanent possession of the silver-mounted gavel put in play by J. A. Galloup as emblematic of team championship when it beat the Michigan Trade Golf Association in the annual match between the two organizations at Battle Creek Country Club, Battle Creek, Mich., August 14. This was the fourth inter-association tournament held by these two crowds, each one at Battle Creek, where J. A. Galloup, president of Galloup Pipe & Supply Co., is host at his club. It ended up with the Chicago crowd having 62½ points in the Nassau system of scoring to 37½ for the Detroit team. It represented the second victory in the last three starts for the Western Trade Golf Association, and the gavel was won permanently thereby—two out of three wins being the basis for the permanent award.

The biggest crowd yet recruited for this annual match turned out. Chicago particularly, under the captaincy of John J. O'Shea, made a better showing in point of attendance than in any previous year, and, as usual, Andy Galloup was the perfect host. W. M. Byrd, Alabama Pipe Co., put on a barbecue dinner for the players after the match, which was thoroughly enjoyed.

The teams were matched up as follows:

WESTERN TRADE		MICHIGAN TRADE	
Player	**Points**	**Opponent**	**Points**
J. M. Grace	3	D. W. Berry	0
J. J. O'Shea	1½	H. Sheley	1½
G. E. Tebbetts	2½	G. A. Hughes	½
W. T. Walters	0	L. S. Bigelow	3
H. M. Hart	0	F. McKinley	3
J. Hoffrichter	1	C. T. Morse	2
J. F. Dickson	3	R. K. Milward	0

FACTS *with* CASH-VALUE *for* PLUMBING COMPANIES!

Pictured is one of the General Motors Trucks which help maintain the quick, dependable, efficient service of the *SPEAKMAN COMPANY, Manufacturers and Dealers, Plumbing Fixtures and Steam Supplies, Wilmington, Delaware.*

"We have gradually added to our fleet of trucks until we now have four of your models, ranging from one to two years old," the company writes.

"These trucks are giving excellent service and we are very well pleased with them."

THE General Motors Truck branch, distributor or dealer in your city or community is eager to help you obtain a bigger profit on every dollar invested in your haulage equipment. He has facts and figures on how firms in all lines of business have used G.M.T. equipment to make more money, cut operating costs, open up profitable new territory.

He would like to make a detailed, thorough study of your haulage requirements. Then, utilizing the engineering resources and experience of the General Motors Truck Company, he will recommend, from this great line of truly modern vehicles, the exact equipment that will serve you most economically and profitably.

Write, phone or call. General Motors Truck Branches, Distributors or Dealers are located in 1500 principal cities and towns.

The right truck for you?

There is no truck operation for which you cannot find the right equipment in the complete line of General Motors Trucks. Forty-two models, of capacities from 3,800 lbs. to 28,000 lbs., total gross weight capacities (including load), cover every need of Light, Medium and Heavy Duty.

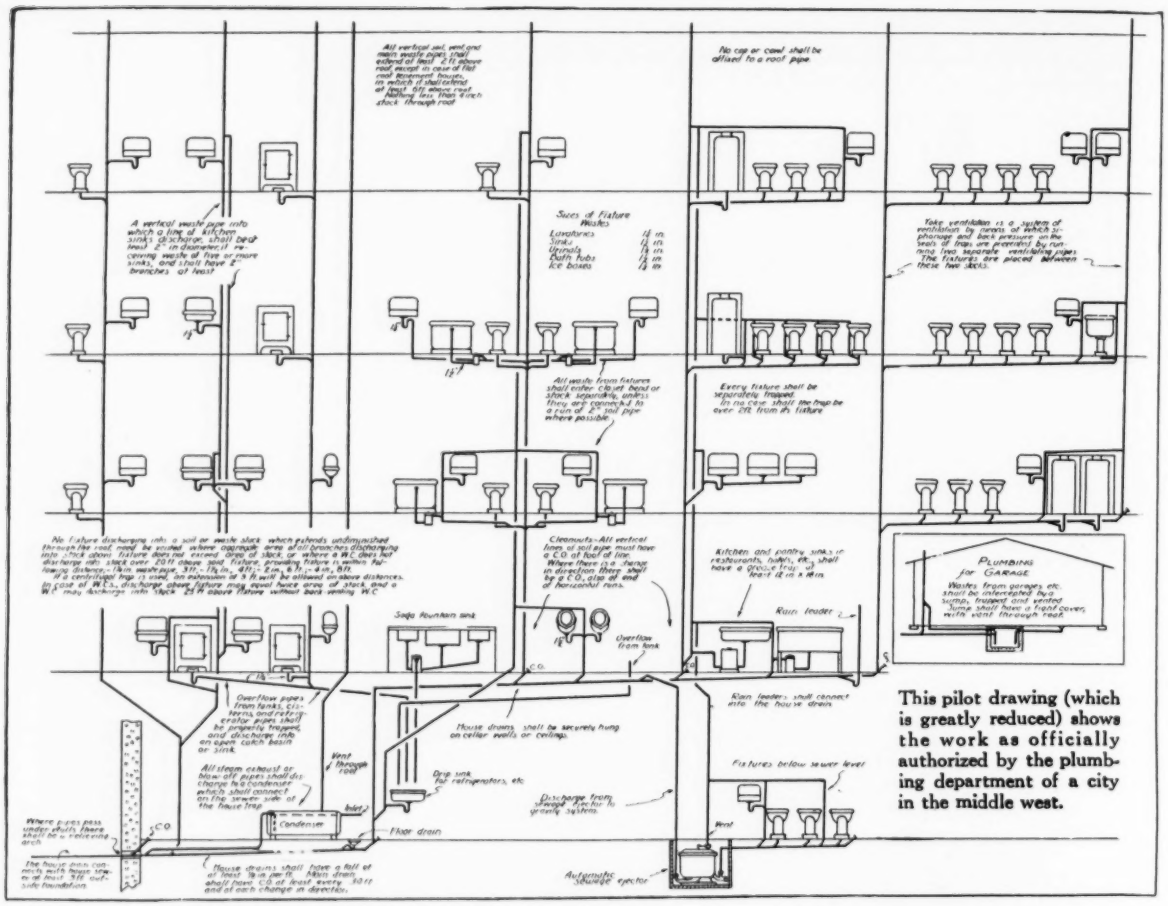
GENERAL MOTORS TRUCKS

GENERAL MOTORS TRUCK COMPANY, Pontiac, Michigan

(Makers of GENERAL MOTORS TRUCKS, and YELLOW TAXICABS and COACHES)

(Time payments financed through Y. M. A. C. plan at lowest available rates)

ALWAYS INVESTIGATE WHAT GENERAL MOTORS HAS BEFORE YOU BUY


All vertical soil, vent and main waste pipes shall extend at least 2 ft above roof except in case of flat roof. Basement houses, on which it shall extend at least 5ft above roof. Nothing less than 4 inch stack through roof
No cap or cowl shall be affixed to a roof pipe.
A vertical waste pipe into which a line of kitchen sinks discharge, shall be at least 2" in diameter. It receiving waste of five or more sinks, and shall have 4" branches at least
Sizes of Fixture Wastes
Lavatories 1¼ in.
Sinks 1½ in.
Urinals 1½ in.
Bath tubs 1½ in.
Ice boxes 1¼ in.
Yoke ventilation is a system of ventilation by means of which siphonage and back pressure on the seals of traps are prevented by running two separate ventilating pipes. The fixtures are placed between these two stacks.
All waste from fixtures shall enter closet bend or stack separately, unless they are connected to a run of 2" soil pipe where possible.
Every fixture shall be separately trapped. In no case shall the trap be over 2ft. from its fixture
No fixture discharging into a soil or waste stack which extends unobstructed through the roof need be vented where drainage area of all branches discharging into stack above fixture does not exceed area of stack, or where a W.C. does not discharge into stack over 20 ft above said fixture, providing fixture is within following distances: 1¼in. waste pipe, 3ft.; 1½ in., 4ft.; 2 in., 6 ft.; 3 in., 8ft. If a centrifugal trap is used, an extension of 5 ft. will be allowed in above distances. In case of W.C.s., discharge above fixture may equal twice area of stack, and a W.C. may discharge into stack 2 ft above fixture without back venting W.C.
Cleanouts—All vertical lines of soil pipe must have a C.O. at foot of line. Where there is a change in direction there shall be a C.O., also at end of horizontal runs.
Kitchen and pantry sinks in restaurants, hotels, etc., shall have a grease trap of at least 12 cu. x 4in.
PLUMBING for GARAGE
Wastes from garages, etc. shall be intercepted by a suitable trap, trapped and vented. Same shall have a frost cover, with vent through roof.
Soda fountain sink
Overflow from tank
Rain leader
Overflow pipes from tanks, cisterns and refrigerator pipes shall be properly trapped, and discharge into an open catch basin or sink.
Rain leaders shall connect into the house drain.
House drains shall be securely hung on cellar walls or ceiling.
All steam exhaust or blow off pipes shall discharge to a condenser which shall connect on the sewer side of the house trap.
Vent through roof
Drip sink for refrigerators, etc.
Fixtures below sewer level
Discharge from sewage ejector to gravity system.
Where pipes pass under drains there shall be a relieving arch.
Condenser
Floor drain
Vent
The house drain connects with house trap one foot from outside foundation.
House drains shall have a fall of at least ¼ in. per ft. Main drain shall have C.O. at least every 30 ft and at each change in direction.
Automatic sewage ejector

This pilot drawing (which is greatly reduced) shows the work as officially authorized by the plumbing department of a city in the middle west.

Pilot Drawings Simplify Your Work

All regulations, whether printed in code or verbally demanded, are plainly illustrated in a pilot drawing. They are easily understood by either master, journeyman or apprentice.

They are a big help in selling, estimating and installing. They help to visualize the work that is to be done and eliminate all chance and guesswork. They save expensive delays and mistakes by workmen.

STATES

Indiana
Ohio
Pennsylvania

CITIES

Georgia:
Atlanta
Augusta

Indiana:
Indianapolis

Kentucky:
Paducah

Michigan:
Battle Creek
Flint
Kalamazoo
Lansing

New Jersey:
Arlington
Asbury Park
Atlantic City
Balmar
Bloomfield
Caldwell
Camden
Carlstadt
Cliffside
Deal
East Orange
East Rutherford
Elizabeth
Garwood
Grantwood
Guttenberg
Harrison
Hasbrouck Heights
Hillside
Irvington
Kearney
Kenilworth
Linden
Lyndhurst
Montclair
Moonarchie
North Arlington
North Bergen
Orange
Plainfield
Roselle
Roselle Park
Cranford
Rutherford
South Orange
Town of Union
Verona
Wellington
Weehawken
Westfield
West New York
West Orange
Woodbridge

Ohio:
Akron
Dayton
Toledo

Pennsylvania:
Allentown
Altoona
Bethlehem
Easton
Lancaster
New Castle
Washington
York

Virginia:
Roanoke

Every plumbing contractor should have a pilot drawing for every city or town in which he is registered.

Authorized pilot drawings that have been checked and approved are now available through the book department of DOMESTIC ENGINEERING for the states and cities shown in the adjoining column. They come in blueprint form, size 22 x 28 inches. The price of each is $2.50. If purchased in quantities of 12 or more the price is $2.00 each.

Order the pilot drawings you need now. They will save time for you everyday.

▼▼▼

DOMESTIC ENGINEERING

1900 Prairie Avenue

CHICAGO :: ILLINOIS

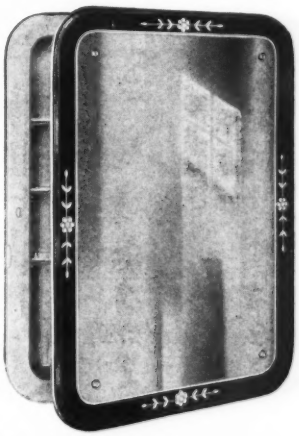
C. W. Lampe	3	Fred Bartow	0
A. P. Campbell	0	C. A. Darwin	3
J. H. O'Brien	3	H. E. Paetz	0
H. G. Thomas	0	J. Pitchford	3
J. H. McCann	0	G. A. Pipper	3
E. C. O'Connor	0	S. L. Franklin	0
E. E. Ellis	0	R. R. Williams	1
W. F. Thumm	3	R. L. Dippman	0
H. W. Mollison	2½	H. M. Armstrong	½
J. C. Matchett	1½	H. H. Hughson	1½
A. E. Norman, Jr.	3	H. Millar	0
H. J. Bradley	3	Harold Taylor	0
C. F. Olsen	½	E. J. Anderson	2½
G. A. Jones	3	C. H. Soderberg	0
Russell Doherty	0	H. A. Swartz	3
L. J. Pitcher	½	Tom Brown	2½
J. H. Milliken	0	Porter West	3
J. Comer	0	I. P. Young	3
C. H. Rankin	3	Robert Lang	0
R. M. Stackhouse	3	McSorley	0
Frank Hackett	3	J. P. Bassler	0
W. E. Foskett	2½	L. McConachie	½
R. E. Moore	3	E. L. Klim	0
Paul Hyland	2½	W. G. Boales	½
C. A. Baldwin	3	M. W. Egler	0
H. W. Evans	3	F. D. Cooper	0
Van Buren	3	H. Rylander	0
H. E. Crum, Jr.	2½	J. Getty	½
Total	62½	Total	37½

Uniflow Mfg. Co. Holds Convention

More than one-hundred persons connected with the distribution and sales of the Uniflow Mfg. Co., Erie, Pa., were present at the company's annual convention, which was held at the Lakeside hotel, North East, Pa., about 16 miles from Erie, August 19 to 21. Nothing was overlooked to make the convention a success. The business sessions were peppy and instructive and when the business meetings were fin-

Top row: J. A. Snider, secretary and works manager; C. A. Kuebler, president and general manager; M. A. Martin, vice president and general sales manager; Otto G. Sapper, sales promotion manager. Middle row, at left: The winning team, Marshall Bergstrom and I. T. Hill, of Chicago. At right: The Boston team (losing team). Bottom picture: Group photograph of the convention of the Uniflow Mfg. Co., taken in front of the hotel

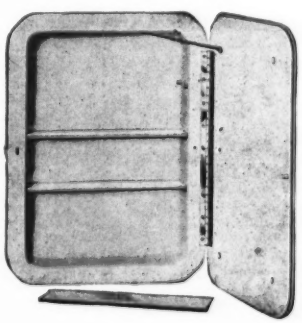
THE CABINET OF TODAY AND TOMORROW!



CORCORAN
one piece
Steel Bathroom
CABINETS

Corcoran Cabinets are the Original and Only One-piece Steel Cabinets. No cracks—No seams—No welded joints—No raw edges.

THERE is prestige, ready-made and waiting for you when you specify Corcoran Cabinets—not necessarily because of the trademark, but because of the high attention value and construction features found in Corcoran One Piece Steel Bathroom Cabinets.



1 Newly patented device opens door instantly when pressure is applied to button.

2 Cabinet body and flange drawn from one continuous piece of steel.

3 Round corners inside and outside harmonize with all bathroom fixtures.

4 Continuous piano type brass hinge will not sag or warp.

5 Bulb edge glass shelves cannot slip forward.

6 Special pad prevents mirror breakage.

Corcoran Cabinets are sold through Jobbers only.

Write for new Catalogue

***The* CORCORAN MFG. COMPANY**
Cincinnati, Ohio

THE CORCORAN MFG. CO., DEPT. DE-9

Gentlemen: We are interested in Corcoran One-Piece Steel Bathroom Cabinets. Kindly send catalogue and full details.

Name.....

Address.....

City.....State.....

☐ Jobber ☐ Contractor

Complete stocks are now being carried in Chicago, New York, Philadelphia and Boston; communicate with Corcoran offices at 1820 McCormick Bldg., Chicago; 1228 Locust St., Philadelphia; 11 West 42nd St., New York, and Beaudette & Graham Co., 9-5 Boylston Street, Boston.

DUBÉ
Garbage Burning Water Heater

Question: To what type of buildings are Dubé Combined Garbage Burning Water Heaters most adaptable?

Answer: Every type of construction can have Dubé hot water and garbage disposal. Dubés are successfully installed and have been successfully operating in residences, apartments, hotels, restaurants, hospitals, etc., for many years.

Question: Is there any great amount of work to installing the Dubé?

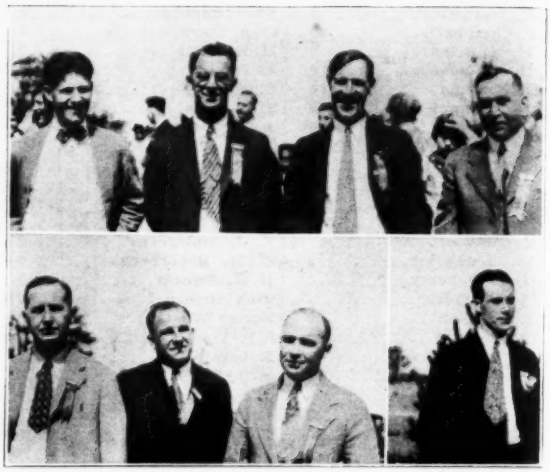
Answer: No more than required for the ordinary water heater and often not as much.

Question: Does the Dubé company maintain a department for advising me on installation problems?

Answer: Dubé engineers will welcome the opportunity to answer your questions and you will be obligated in no way by calling on them.

Write today for any information you wish.

DUBÉ BOILER WORKS
1244 E. 73rd St., Chicago, Ill.



Top row: Messrs. Marsh, Brooks, Heath and Shetler, officers of 100% Club. Bottom row: Messrs. Klotz, Morin, Reynolds and Keller. Photos taken at the convention held by the Uniflow Mfg. Co.

ished the entertainment committee saw to it that all enjoyed themselves.

The company's officers and personnel, which is as follows, were all present at the convention: C. A. Kuebler, president and general manager, M. A. Martin, vice president and general sales manager, J. A. Snider, secretary and works manager, J. F. Weir, treasurer and office manager, Otto G. Sapper, sales promotion manager, A. J. Hoffman, engineering department, Arnold Kish, purchasing agent and E. Wade, order department.

The opening session was called to order on Monday morning with addresses of welcome by C. A. Kuebler, J. A. Snider and Earl Evans, mayor of North East.

In the afternoon an inspection trip was made to the company's factory, the party being in charge of Mr. Kish.

This was followed by a golf match between Messrs., Marsh and Steele, the Boston team and Messrs. Bergstrom and Hill, the Chicago team. The match was closely fought and a large gallery followed the players.

The scores were as follows for the nine holes:

Hill	6	6	6	7	4	5	6	5	3	—48
Bergstrom	5	5	5	6	5	3	5	4	4	—42
Steele	5	6	3	5	4	5	7	4	3	—42
Marsh	5	7	6	7	7	6	6	6	3	—51

The Tuesday morning session started off with the installation of officers in the 100 per cent club. In the afternoon Mr. Hoffman and Mr. Kuebler talked on the company's products and its business. Both the morning and afternoon sessions on Wednesday were devoted to business discussions.

For entertainment there was a boat ride on Tuesday evening as well as special affairs such as luncheons and sight-seeing trips for the ladies. The convention spirit was saddened when news of the death of Mr. Kuebler's father was received upon returning from the boat trip.

M. J. Feeney Addresses Hajoca Corp. Meeting

The Hajoca Corp., Philadelphia, Pa., held one of its regular meetings dealing with its plan of customer co-operation, at Baltimore, Md., on August 23. Maney J. Feeney of Philadelphia, secretary of the National Association of Master Plumbers, was one of the principal speakers at the meeting, taking as his subject, "modern merchandising of plumbing and heating materials." Mr. Feeney's remarks were based upon his own retailing experiences and were highly appreciated by his listeners. About 125 master plumbers were present.

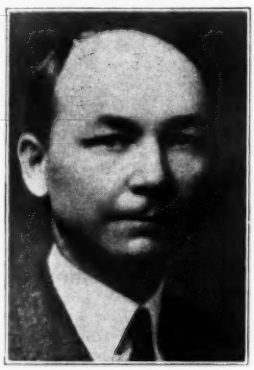
◆

Bastian-Blessing Co.'s Earnings Show Gain

Lewis G. Blessing, vice-president of Bastian-Blessing Co., Chicago, reports that earnings in July, this year, showed a 61 per cent increase over the same month a year ago and that unfilled orders of the company are the largest in its history.

◆

L. B. McMillan Dies in Airplane Accident



L. B. McMillan

Luther B. McMillan, for thirteen years general consulting engineer of the Johns-Manville Corp., New York City, died Saturday, August 10, at the St. James Hospital, Newark, N. J., as a result of injuries received in an airplane accident the evening before.

Mr. McMillan was born at Bem, Mo., September 21, 1891, and was graduated in 1911 from the Texas Agricultural and Mechanical College with the degree of Bachelor of Science in mechanical engineering. In 1912 he received the degree of Mechanical Engineer, and in 1913 that of Chemical Engineer. He was awarded a fellowship in engineering at the College of Engineers of the University of Wisconsin for 1913-1914 and received the degree of Master of Science in the latter year. After serving two years as instructor at this institution and specializing in research in the science of heat transmission and insulation, he became general consulting engineer for the Johns-Manville Corporation, which office he held until his death. He was a member of the American Society of Heating and Ventilating Engineers and several other engineering societies, for which he prepared several notable papers. His untimely death is greatly regretted by all who knew him.

◆

Rush S. Allen Called by Death

Rush S. Allen, export salesman with Goulds Pumps, Inc., Seneca Falls, N. Y., died in a New York City hospital on August 3 following an attack of acute appendicitis. Mr. Allen was born in Cato, N. Y. His duties had taken him to nearly every place of importance in the World and he had been with the concern for more than 25 years. Surviving him are his widow and two sons, Rush and Gibson Allen.

The Old Faults Are Gone

All of the old faults of tank balls that for years have been causing your customers to complain and you to lose money have been eliminated from the new

DUR-A-BAL

Order this display carton from your jobber. They sell without effort and pay you a good profit.

LAVELLE RUBBER CO.
320 West Illinois St. Chicago, Ill.

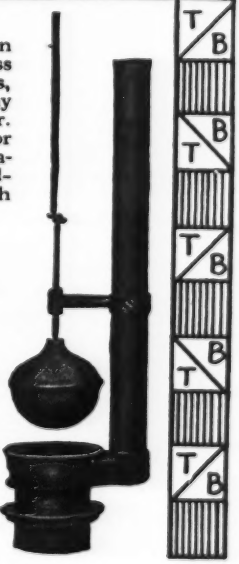
DUR-A-BAL

TRENTON BRASS PRODUCTS

BALL COCKS—TANK VALVES

Complete investigation on your part, of Trenton Brass Ball Cocks and Tank Valves, will at once show you why they are highly superior. Whatever your customer's or your own most rigid specifications are, they will be adequately taken care of with these products.

Write for our complete catalog.



The Trenton Brass & Machine Co.
TRENTON NEW JERSEY

Represented by
ROLLIN C. WILSON

7 E. 42nd St., New York, N. Y.
261 Franklin St., Boston, Mass.
13 North Ave., East, Cranford, N. J.

General Contractor Architect Heating Contractor Financier

Welding Gains New Friends Every Day

Welding students at school

Architect: Is welding in pretty general use, Morgan? I mean, is it being used in large construction all over the country?

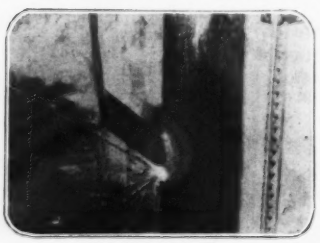
Heating Contractor: Yes. Welding is being widely used and is gaining new friends every day. Leading trade schools everywhere are giving courses in welding.

Welding a bend, on the job

This increasing use of pipe welding is but a natural result of the knowledge that welding is so much better and so much more economical.

Welding LOOKS strong and IS strong

When you stop to consider that just about every piping problem you'll ever encounter can be taken care of by the welder, right there on the job, without expensive delays, you'll begin to understand why leading contractors everywhere are turning to welding.



No job is too difficult for Rego

The jobs illustrated on this page are but a very few of the ones you can do with welding equipment. Rego welding equipment will do these jobs in a manner not to be surpassed. Write the Bastian-Blessing Co. today for full information on Rego welding.

The BASTIAN - BLESSING CO.
254 E. Ontario St. Chicago, Illinois

Personal Mention

Harry S. Ashmun, vice president of the Armstrong Mfg. Co., Bridgeport, Conn., accompanied by Mrs. Ashmun, left on August 23 on the North German Lloyd Steamer "Bremen" for an extended European trip. They will visit France, England, Holland, Germany, Belgium, Czecho-Slovakia, Austria, Switzerland and Denmark and will return home about November 9. Mr. Ashmun intends spending some time studying the tool manufacturing situation in Germany and the general tariff conditions in the countries visited as well as calling on the company's customers.

W. B. Crawford

W. B. Crawford has opened a branch office for the Terre Haute Boiler Works, Terre Haute, Ind., in the Builders building, 228 North La Salle street, Chicago, Ill. An exhibit will be maintained on the second floor of the building. Mr. Crawford was formerly manager of the heating department of J. P. Marsh Co., Chicago, which position he recently resigned.

W. B. Schuler, manufacturer's representative with offices at 360 North Michigan avenue, Chicago, Ill., is moving on October 1 to 720 Cass street. The new location will give Mr. Schuler a ground floor office with warehouse facilities in direct connection.

John H. Lawrence, vice president and manager of Thomas E. Murray, Inc., consulting engineers of New York City and Detroit, has just been elected president of this concern. The other officers of the company are: Thomas E. Murray, Jr., chairman; Joseph B. Murray and John F. Murray, vice presidents.

Frank Curtin

Frank Curtin, sales and production manager of the A. F. Curtin Valve Co., Medford, Mass., who was married on July 1, has returned to his office after an extended honeymoon trip to Bermuda. Previous to Mr. Curtin's marriage a surprise party was given in his honor at the offices of the company by the employes. This came as a complete surprise to Mr. Curtin since he himself had already arranged a similar party for Walter Hoskins, one of the firm's employes, and thus the tables were turned.

Charles H. Comstock, formerly manager of the old Lorraine Mfg. Co., Lorraine, Ohio, and an important factor in the industry, several years back, has just completed the renovation of a lodge in the woods at South Chatham, N. H. Mr. Comstock has named his camp "Rainbow Lodge."

THE TRADE

NEWS FOR PLUMBING AND HEATING CONTRACTORS

Northwestern Heating Contractors Hold First Meeting

The first annual convention of the Heating and Piping Contractors of the Northwestern States was held at Dunwoody Institute, Minneapolis, August 26 and 27, with about one hundred men present, representing both the contracting and wholesaling branches.

At the dinner meeting on Monday evening the following men spoke: Fred Stiller of Minneapolis, president of the new group; V. Peavy of Minneapolis, secretary; H. Merwin Porter of Minneapolis, representing the Heating and Piping Contractors National Association; C. A. Honold of Sheboygan, Wis., a director of the Wisconsin group; A. R. Thompson of Norfolk, Va., who is chairman of the national committee on certified heating; E. G. Byrd, field representative of the national body; John S. Jung of Milwaukee, a national director; J. H. Hay of St. Paul, Deputy Commissioner of Agriculture and Dr. C. A. Prosser of Dunwoody Institute.

It is planned to hold another meeting in January.

◆

Salt Lake Association Appoints New Board Member

George W. Bruerton was appointed a member of the board of governors of the Salt Lake City, Utah, Association of Sanitary and Heating Engineers at the regular semi-monthly meeting, held on August 1 in the association suite in the Hooper building. Mr. Bruerton succeeds William A. Bywater, past national director, who recently formed the Bywater-Whitely Plumbing Company with George M. Whitely. As Mr. Whitely is vice president of the association and a member of the board, Mr. Bywater resigned in order to eliminate the same concern having two members on the board.

Mr. Bruerton has been a master in Salt Lake City for a number of years and is also a member of the school board of the Granite school district. Mr. Bywater was the first president of the Salt Lake organization, in which capacity he served two terms. He also served as national director for two years. The new Bywater-Whitely Plumbing Company has opened an attractive store at 133 East Broadway.

President Parley G. James presided at the meeting which was attended by representatives of twenty-five firms. Herman Schrader returned from a trip to California in time to attend the meeting as did Mr. Bruerton, who has been visiting the Yellowstone National Park. Robert Snedden was absent on a trip to Montana and Yellowstone Park, while John W. Dudley, former secretary of the Utah state association, was also away.

◆

Richmond Association Discusses Trade Practices

The Master Plumbers and Heating Association of Richmond, Va., following a recent meeting at which the Federal Trade Practice Rules were discussed, is urging the membership to list the bad practices that exist and of which a member has personal knowledge. This action is a step toward the working out of a set of rules for presentation to the Federal Trade Practice Commission for approval. The rules are eventually to be placed be-

Has Attractive Showroom in White Plains, N. Y.

THE neatly arranged showroom at the left is maintained by Harry Singer, at his place of business on Grove street, White Plains, N. Y. The plumbing and heating goods and the various accessories are so arranged as to make it easy for prospective customers to inspect the goods. The office is in the rear.

fore the commission by the National Association of Master Plumbers and the Heating and Piping Contractors' National Association. Committees of these organizations are now at work on the proposition.

◆

South Bend Annual Picnic Is Well Attended

The members and families of the South Bend, Ind., Society of Sanitary Engineers held their annual picnic at Barron Lake, Mich., on Thursday, August 15, more than one hundred persons being present.

Numerous games were on the program, including a baseball game, wheelbarrow races, tug-of-war, plate breaking contest, nail driving contest, running races, etc. Soft drinks and sandwiches were served during the day and in the evening the guests repaired to the West Shore hotel where dinner was served. Lola Trowbridge and her entertainers provided amusement during the dinner hour.

Charles M. Oberlin, president of the organization, presided at the dinner and introduced J. E. Withers, who has recently joined the organization as business manager. Mr. Withers held this same position several years ago, but more recently has been secretary of the Rockford, Ill., Master Plumbers Association.

The committee in charge of the affair consisted of Robert Brausndorf, chairman; Louis Niezgodski, R. Perkins, Joseph Fleck, Clem Niezgodski and Chester Niezgodski. Mrs. Louis Niezgodski and Mrs. Thomas McGrath supervised the entertainment for the ladies and children and helped to see that everyone had a good time.

◆

Metropolitan Trade Golfers Meet

The Metropolitan Trade Golf Association, holding its fourth meeting of the year on August 21 at the Upper Montclair Country Club, Upper Montclair, N. J., was the guest of Lew Power of Grabler Co., New York City. While the attendance was comparatively small, the members had an unusually enjoyable day which was marked by excellent golf.

Group of Florida and North Carolina folks who visited Niagara Falls following the National convention at Buffalo, N. Y. Those in the party are J. P. Simpson and Mrs. Simpson, first vice president of the Florida auxiliary, Ft. Lauderdale, Fla. W. R. Dosher of Wilmington, N. C., national director, and Mrs. Dosher; Mrs. R. E. Martin of Miami, past president of Florida auxiliary; Mrs. F. R. Fanning of Winter Park, Fla., recording secretary of the National auxiliary; J. A. Quinn and Mrs. Quinn of Miami, F. W. Gates of Bradenton, Fla., and Mrs. W. E. McAndrew of Tampa, Fla., president of the National auxiliary

The scores for the day's golf meet follow:

	Morning	Afternoon
Fred Korndorfer	91—27—64	87—27—60
E. F. Conroy	115—42—73	118—42—76
T. A. Johnson	79—10—69	76—10—66
L. S. Rothwell	86—20—66	86—20—66
P. C. Platt	84—20—64	87—20—67
Lew Power	80—10—70	No card
H. Garrity	102—23—79	95—23—72
Fred Allen	103—28—75	96—28—68
Charles Wall	104—20—84	97—20—77
Charles Foster	109—40—69	98—40—58
John Davis	108—40—68	109—40—69
Frank Oliver	No card	99—25—74
Fred Broatch	92—18—74	No card
Karl Roberts	95—28—67	96—28—68
A. C. Hanson	No card	No card
Joe Sels	No card	
M. Ready	102—25—77	98—25—73

P. C. Platt of Sloan Valve Co., with his net 64, was awarded a pair of candle sticks, while Fred Korndorfer of S. C. Marks, for his similar score, got a pair of silver salt and pepper shakers.

A golf bag became the property of L. S. Rothwell of American Pin Co., when he turned in a net 66, and Charles Foster of Iron City Sanitary Mfg. Co. won a set of matched approaching irons with his 69.

In the kicker's handicap the cards of Charles Wall of Sloan Valve Co. and Fred Allen of Trenton Potteries Co., each with a 76, brought them a dozen golf balls and an ash tray, respectively.

Karl Roberts of the American Brass Co. drew a silver dish with his 78 and Frank Oliver of Oliver Bros. received a golfer's umbrella with a card of 79.

◆

Montreal Association Revises Constitution

Revision of the constitution of the Oil Heating Association of Montreal, Canada, was authorized at the recent regular monthly meeting of the association. The new constitution will be similar to those of the Canadian Oil Heating Association and similar American associations which the president and secretary have studied. A new letter head was also adopted and a crest was suggested.

Standards of installation, proper supervision and standardizing equipment were discussed during the session. Other routine business was transacted. John T. Lewis, president, was in the chair.

◆

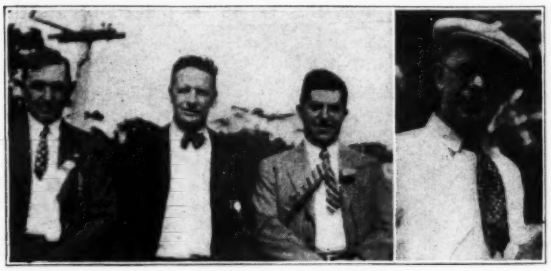
New Bedford Holds Largest Outing

The New Bedford (Mass.) Master Plumbers Association held one of its largest outings on Thursday, August 8, at Fort Phoenix, Fairhaven, Mass. Over two hundred and fifty members and guests from various sections of the state motored to this attractive spot.

There were plenty of amusements for all. Those who did not participate in the ball game or the races enjoyed themselves with a dip in the ocean.

Immediately following dinner the athletic events were started. The potato race for girls was won by Rosamond Stowell, who received a fountain pen. The same race for boys resulted in a tie between William Mielberry and Russell Carrier, both of whom received a pen and a ball. The potato race for women was won by Anitia Smith, who received a pen.

The sack race for men was won by C. B. Belnap, who received a carton of cigarettes. The 100-yard race for



Left to right: A. H. Wardle, Fall River; R. T. Thatcher, Fairhaven, president of Massachusetts association; R. A. La Centra, Boston; Joseph Singleton, Springfield, Mass. Photos taken at the outing of the New Bedford Master Plumbers' Association

women was won by Mrs. Harry Mulberry, and Mrs. Walter Sullivan came in second.

The 100-yard race for men was won by Ed. Murphy, who received a flashlight. The three-legged race was won by William Morgeson and Doris Morgeson; both received prizes. The crab race was won by T. J. Ryan, who received a carton of cigarettes and a lighter.

The tug-of-war between the master plumbers and the wholesalers was won by the masters.

It was voted to extend the thanks of those in attendance to the committee in charge of the affair, through the columns of DOMESTIC ENGINEERING. The committee was as follows: F. H. Robinson, chairman; Walter P. Bailey, Mark Greenleaf, N. Z. Delano, R. E. Hartley, Harry Mulberry, E. P. Hirst, James Woodacre.

◆

P. and H. Club Holds First Tournament Meeting

The spacious dining-room of the Mill Valley Country Club, situated in Marin County just across the bay from San Francisco, Calif., was the scene of the first golf tournament meeting of the Plumbing and Heating Club of San Francisco and the bay cities on the evening of August 8. According to the recently adopted plan, the club members are still gathering twice monthly, once for their regular luncheon meeting at the Elks Club, the other session taking place immediately after dinner at whatever country club has been selected for holding the monthly golf meet.

Twenty-seven players teed off promptly at 1:00 o'clock and those who had never before swung a stick over the Mill Valley course soon learned what it was all about. While there are no sand traps, plenty of natural hazards are to be found, such as side hills and a deep ravine that zigzags across the fairway and is particularly bad when shooting for the second and third holes. With John Camp, however, these little difficulties failed to register even as mental hazards. A comparatively new player and one still working with a 27 handicap, Mr. Camp surprised everyone, himself included, by shooting a fast 86, or net 59, said to be the lowest net score ever turned in by a member of the club.

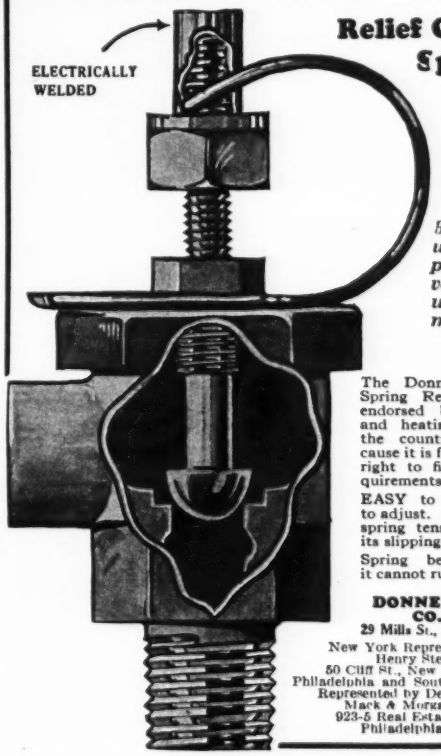
Other remarkable playing, all things considered, was that of William A. Rowe, Fred E. Oelschlagel, Frank H. Klimm, Howard W. Finch, and others, who picked up a birdie now and then. The driving of R. B. Lees and W. H. Rainwater, and the putting of Walter R. Mead and William A. Rowe, were also features of the afternoon's play.

In class "A," J. V. Young and T. C. Douglass tied for

DONNELLY SPECIAL

Relief Outside Spring Valve

ELECTRICALLY WELDED



Be sure you use the proper type valve. Write us for information.

The Donnelly Outside Spring Relief Valve is endorsed by plumbing and heating inspectors the country over because it is fundamentally right to fill drastic requirements.

EASY to install—easy to adjust. Once set, the spring tension prevents its slipping.

Spring being outside, it cannot rust or corrode.

DONNELLY MFG. CO., Inc.
29 Mills St., Malden, Mass.

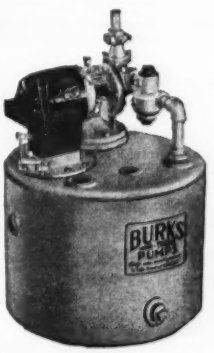
New York Representative:
Henry Stein,
50 Cliff St., New York City
Philadelphia and Southern Territory
Represented by Derbyshire,
Mack & Morgan, Inc.
923-5 Real Estate Bldg.,
Philadelphia, Pa.

CONDENSATION RETURN UNITS—*using*

BURKS Super-Turbine PUMPS

A New Application of Two New Burks Pumps—

Will Not Steam-Bind!!!



Style 100

Write today for Bulletin No. 89 showing Prices, Capacities and Exceptional Performance of these Condensation Units.

Your profit is generous.

DECATUR PUMP CO.
Decatur :: Illinois

Originators and Exclusive Manufacturers of Burks Turbine-Type Pumps That Pump Air!

All Lead-Copper-Galvanized Iron

SIMPLEX AND JUNIOR FLASHINGS FOR EVERY ROOF CAN BE HAD IN EACH OF THE ABOVE METALS.

Write for prices and full information on the easily installed, durable SIMPLEX and JUNIOR Flashings.

SIMPLEX MFG. CO.
2644 N. Ashland Avenue
Chicago, Illinois

"Junior Flashings"

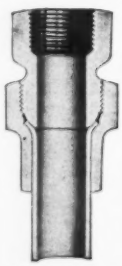
More and more, the tendency is toward something not only highly efficient in heating, but pleasing to the eye as well. McKeesport Radiators accomplish both of these points to greatest satisfaction.

McKEESPORT RADIATION

THE COLUMBIA RADIATOR COMPANY
McKEESPORT, PENNA.

NIBCO Compression Fittings

For Copper Tube Plumbing



Sectional view of Nibco Coupling

The use of Copper Service Tube for all kinds of plumbing has been made possible by Nibco Compression Fittings which eliminate the necessity of cutting threads or making wiped joints. Copper Tube piping is rust-proof, non-corrosive and LESS EXPENSIVE than either brass or lead.

Write for further information about this new and better method of plumbing Today. Ask for Bulletin A-167 and mention the name of your jobber.

NORTHERN INDIANA BRASS CO.
Elkhart, Indiana

Tank Fittings of Quality

1856 "McSHANE" 1929

The ORIGINAL Compound Lever Ball Cock. Elevated, Low-Down, Top and Bottom Supply Tank Levers and Valves.

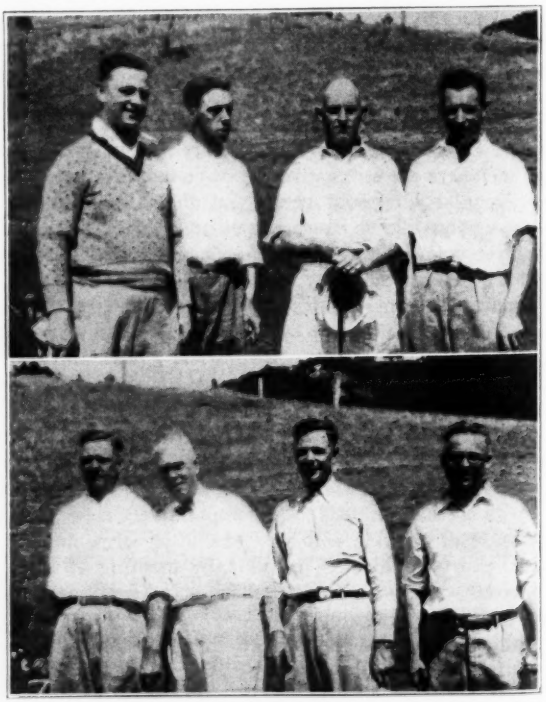
McSHANE BELL FOUNDRY CO.
Baltimore, Maryland

honors with a 67 net, this tie to be played off at the next tournament. Carl J. McCarthy shot a snappy 65 in "B" class, Jack Camp a 59 in "C" class, and Charles W. Higgins a 71 in group "D," to earn a cup in their respective classes. Among the scores turned in were:

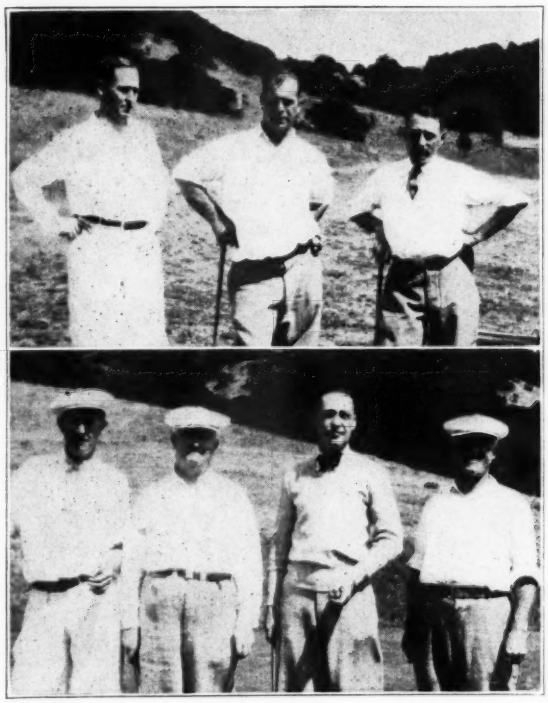
	Gross	Hdcp.	Net
Young	83	16	67
Mead	103	28	75
Kraus	104	31	73
Camp	86	27	59
Rowe	88	20	68
Henderson	101	29	72
Klimm	88	17	71
Oelschlagel	97	Guest	97
Elliott	84	15	69
Douglass	77	10	67
McCarthy	89	24	65
Gilley	92	25	67
Heymans	109	28	81
Lees	91	21	70
Higgins	106	35	71
Leary	94	23	71
Allmon	89	19	70
Rainwater	101	22	79
Finch	97	19	78
Anderson	92	21	71
McIlreevy	89	18	71
Helmer	108	Guest	108
Hoopes	134	27	107
Atwood	110	28	82
Durkee	94	27	67

When dinner was finished President Young opened the meeting with a general talk dealing with the aims of the club and the purpose of holding business meetings in conjunction with the monthly golf tournaments. "Considering that the membership of our club is made up of those most vitally concerned in the welfare of the plumbing and heating industry," said Mr. Young, "the advantages of fraternal association between the manufacturers, jobbers, manufacturers' agents and master plumbers are apparent to everyone. Each of these interests are brought closer together, whether it be on the golf course, at the card table, or while strolling about the grounds, during these afternoons spent in the country once a month."

Thomas C. Douglass, manager of the Heating and Piping Contractors' San Francisco Association, an



Top row: Harry Hoopes, A. G. Atwood, Curtiss N. Gilley and Carl J. McCarthy. Bottom row: C. W. Higgins, Thomas J. Leary, Jack Camp and E. J. Kraus. Photos taken at the August tournament of the Plumbing and Heating Club of San Francisco



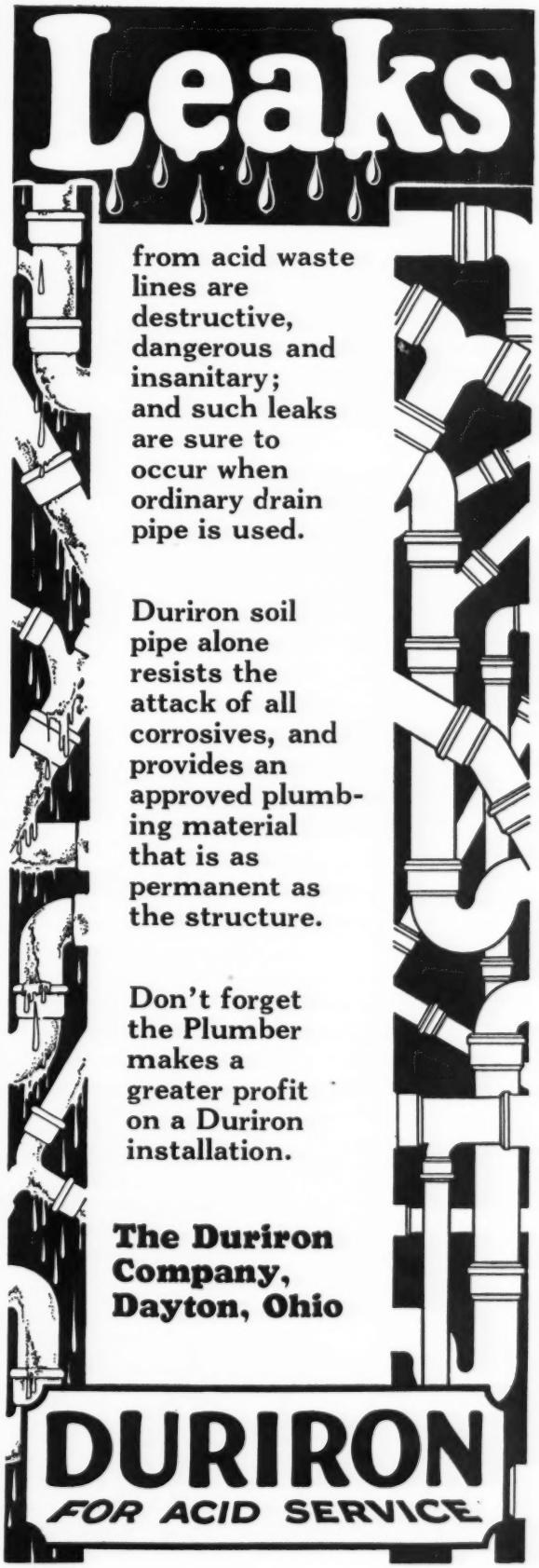
Top row: L. L. Durkee, Jackson Noble and Emile Heymans. Bottom row: Thomas C. Douglass, J. E. McIlreevy, F. F. Elliott and E. C. Helmer. Photos taken at the August tournament of the Plumbing and Heating Club of San Francisco

ardent club member and one who has yet to miss his first tournament, proposed a joint meet, "by mail," between a team selected by the Western Trade Golf Association of the Chicago metropolitan district and one selected by the Plumbing and Heating Club of San Francisco and the bay cities. The proposal met with instant approval.

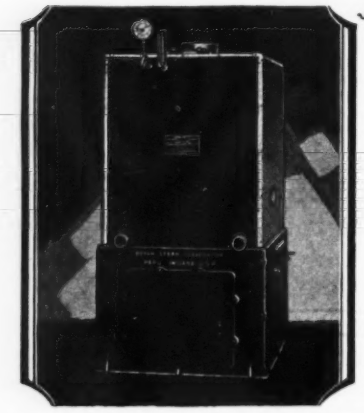
Chairman Emile Heymans of the golf committee gave a brief report of its work, concluding his report by explaining the system of handicapping now in vogue at many of the largest country clubs, and which has been adopted by the club. Handicap figures are arrived at by this method; the last six scores are considered, deducting the highest one; the five remaining scores are averaged, and 75 per cent of the difference between that average and an arbitrary par of 72 is taken for the handicap.

Looking the new fiscal year square in the face, President Young said in part, "There's a big job ahead this year, and we've got to do our parts, individually and collectively, thereby promoting the very best interests of our industry and increasing our club membership. These two considerations are interlocking; if one lags, the other lags, too; if one prospers, so does the other." Whereupon a standing pledge was taken by everyone present, who agreed to do his share toward making this the most progressive year in the history of the industry in San Francisco as well as an outstanding period in the affairs of the Plumbing and Heating club.

At the present time, Mr. Young is devoting considerable time to the selection of committeemen to serve in various capacities, some of which will constitute new committees. These appointments will be announced later.


Leaks
from acid waste lines are destructive, dangerous and insanitary; and such leaks are sure to occur when ordinary drain pipe is used.
Duriron soil pipe alone resists the attack of all corrosives, and provides an approved plumbing material that is as permanent as the structure.
Don't forget the Plumber makes a greater profit on a Duriron installation.
The Duriron Company, Dayton, Ohio
DURIRON
FOR ACID SERVICE

EVEN HEAT / EVERYWHERE All the Time!



FOR Health, and for Comfort, it is necessary that your house be heated evenly throughout and a certain temperature maintained. The Bryan Boiler does this job efficiently. The theory of Bryan Boiler construction is surprisingly simple, yet, it incorporates all of the qualities which are essential to economical and satisfactory house heating with Oil Burners.

Bryan dealers are finding it very easy and very profitable to sell Bryan Oil Burning boilers. Every Oil Burner user is a good live prospect.

BRYAN
STEAM CORPORATION
BOILER DIVISION
PERU, INDIANA U.S.A.

Newton Masters Hold Large Outing

On Thursday, August 15, the Master Plumbers Association of Newton, Mass., and vicinity, held its annual outing at Thompson's Grove, Wilmington, Mass. More than 170 members and guests turned out for this annual affair, and the association was greatly assisted by the Newton auxiliary in making this one of the most enjoyable outings ever held. Thompson's Grove, bordering Silver lake, is an ideal spot for a picnic. Many lounged around under the tall pines, enjoying the cool breeze and restful atmosphere, while others participated in the ball game and other sports. To add to the enjoyment of dinner, music was furnished by a local orchestra. Immediately following the sports, dancing was enjoyed in the dining room of the Thompson house.

The committee in charge of this affair consisted of A. G. Kerr, chairman; John Burke, John T. Ryan, H. McGourty, Walter Heggan and Thomas Hickey, and they are to be congratulated on the fine program. Among the visitors in attendance were James Singleton, president of the Springfield association; R. T. Thatcher of Fairhaven, president of the Massachusetts state association; Wallace T. Wordell of Taunton, and J. Preston Perham of Boston.

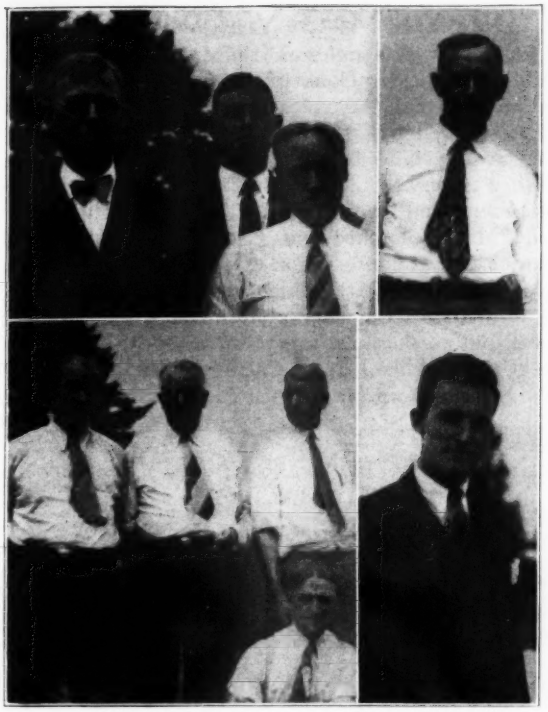
The ball game between the master plumbers and the salesmen resulted in a victory for the former, by a score of 10 to 7. The line up was as follows:

Master Plumbers		Salesmen	
A. G. Kerr	c.	C. Thompson	c.
T. Hickey	1b.	Flavin	p.
J. Burke	3b.	Al Gustafson	1b.
N. Jepson	2b.	Fink	2b
W. Perkins	cf.	Wells	ss.
W. Jepson	ss.	Harwood	3b.
G. Kerr	p.	Fox	cf.
Toster	rf.	B. Weiner	lf.
Z. Hickman	lf.	Hill	rf.

The pipe race was won by Mr. Maguire, with N. Jepson second. The open 50-yard dash was won by George Kerr, with Frank Smith second. The 50-yard dash for Newton master plumbers was won by George Kerr, and John Burke came in second. The 50-yard dash for salesmen was won by John Glynn of Crane Co.

The fat man's race (200 pounds and over) was won

Top row: A. F. Fiske, Fred Warren, and James Maloney of Newton; Al. Gustafson, Holyoke Heater Co. Bottom row: Mrs. Charles Keiser of Newton, president of the Massachusetts Ladies' Auxiliary; R. T. Thatcher of Fairhaven, president of the Massachusetts State Association of Master Plumbers; Al. Winslow, Richardson & Boynton Mfg. Co., John Mullaney, Kohler Co.; F. E. Perkins, Newton. Photos taken at the outing of the Newton Master Plumbers' Association



Top row: C. A. White, Boston inspector; E. W. Poole, Newton inspector; W. A. Wheater, Massachusetts state plumbing inspector; Neil Jepson, Newton. Bottom row: William Hickman, Newton; John Ryan, Waltham; Harry McGourty, Newton; kneeling: C. A. Kerr, Newton; John Mullaney, Kohler Co. Photos taken at the outing of the Newton Master Plumbers' Association

by T. Morris. The three-legged race was won by George Kerr and George Kerr, Jr.

The tug-of-war was won by the team composed of Joseph Singleton, J. Burke, V. Higgins, T. Hickey, R. A. LaCentra and J. Manella. The three-legged race for children under 15 years of age was won by Dorothy Thatcher, and Renauld Stowell came in second. The 25-yard race in the same class was won by Richard Thatcher, with George Hickman coming in second.

The 25-yard race for children over 10 years of age was won by Fred Hickman, with Catherine McGourty coming in second. The pie-eating contest was won by William Hickman, and Harry McGourty was second.

The sack race was won by Irma Maud, Alfred Kerr being second. Bowling on the green was won by Mrs. N. Jepson, and the rolling pin contest went to Mrs. Harry McGourty.

The nail driving contest was won by Mrs. H. McGourty, and the 25-yard dash for women resulted in a victory for Mrs. John Burke. The 25-yard backward race was won by J. Manella, with John Burke coming in second and R. A. La Centra, third.

◆

The plumbing and heating contract on one of the largest jobs to be awarded recently in Richmond, Va., was procured by the R. C. Beverly Heating Co. of that city. Work on the structure, a twenty-two story building which is to be erected for the Central National Bank, has already been started. The contract for the plumbing and heating work is said to be in the neighborhood of $100,000.

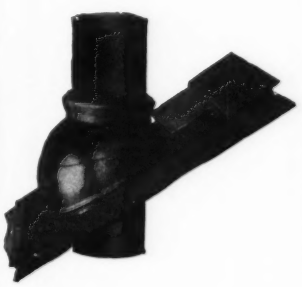
WARNOCK

TRIPLE WEAR WRENCHES

Ever looked for a wrench that would be EASY to use in tight places? Warnock is that wrench. Ever wanted a wrench that really had some wear in it? Warnock is that wrench. Ever wished for a wrench that wouldn't slip and yet wouldn't mar and cut the finish? Warnock wrenches are what you've been looking for for a long time.

Write for our catalog showing sizes and prices

WARNOCK MFG. CO. · WORCESTER, MASS.



Strong, rugged, yet wonderfully attractive in appearance, Bullard Adjustable Galvanized Iron or Copper Roof Flashings will be a compliment to any roof.

They'll save plenty of time and money for you.

THE BULLARD SPECIALTY CO.
Tiffin, .·. Ohio

Why ? ? ?

Wade
Accessible Drains

The old horse and buggy, being old-fashioned, have passed into history. Why tolerate flooded basements, a condition also old-fashioned, when Wade backwater valves can be installed so easily?

WADE IRON SANITARY MANUFACTURING CO.
1717 Canal Street, Chicago, Ill.

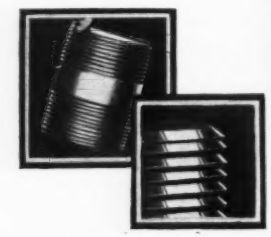
SIMPLIFIED VAPOR HEAT

To take advantage of the Hutchison System of Vapor Heating is not only an indication of good judgment but also a sure way to profits. It is free from complications—efficient and inexpensive.

Write for complete details.

Hutchison Regulator Sales Corporation
4306 — 36 Street Long Island City, N. Y.

HUTCHISON SYSTEM



WARE

Notice the careful chamfering and the clean threads of Ware Brass Nipples. No burrs — no broken threads to keep them from making-up at the first turn.

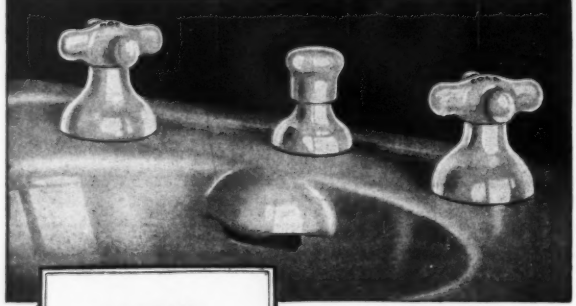
That's the reason Ware Nipples are favorites — there's no wasted time when they are used.

And they're packed right too! Packed and assorted in handy bags and cartons.

Ask your jobber to see that you are supplied.

Ware Coupling & Nipple Co.
Ware, Massachusetts

DECECO
ALL-CHINA FAUCETS
WHITE, BLACK AND COLORS



WITH no plating to wear or peel off, and immunity to all acids and cleaning compounds DECECO ALL-CHINA FAUCETS and FIXTURES, with their entire absence of exposed metal and guaranteed unbreakable construction, provide everlasting beauty and cleanliness, the utmost in faucet equipment.

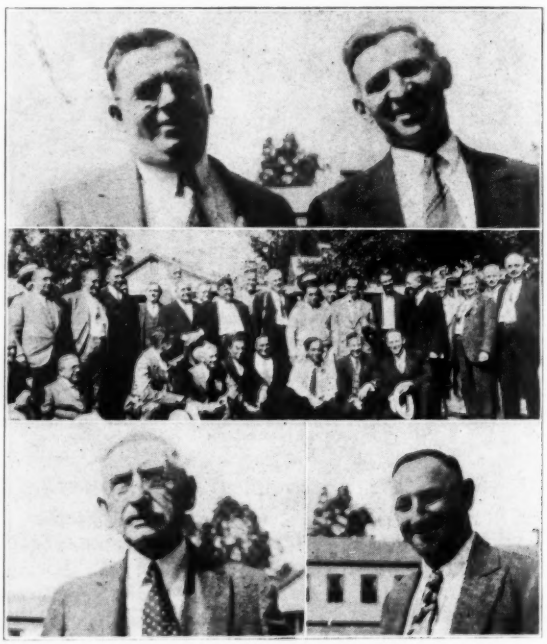
Your jobber will supply them in any type required. Write for catalogue showing the full line.

THE DECECO COMPANY
76 BATTERYMARCH ST. BOSTON

New York Masters Visit Welfare Camp

Situated a few miles north of Brester, N. Y., in hilly Westchester County, Welfare Camp, an institution for small, convalescent children of poor parents, founded by Mathew J. Kennedy, president of the Greater New York Master Plumbers' Association, was visited on August 21 by over 150 master plumbers and their friends. The visitation, preceded by a luncheon at Green's hotel, Danbury, Conn., was a manifestation of admiration and esteem which is felt for Mr. Kennedy, who is also president of the camp, by master plumbers not only in New York but throughout the country.

At the luncheon Fergus McLoughlin, president of the New York State Master Plumbers' Association,



Top row: Thomas Dorsey, president of Manhattan Master Plumbers' Association; Harry Sugarman, president of the Bronx Master Plumbers' Association. Middle picture: Group of Brooklyn master plumbers. Bottom row: Alex Brown, executive secretary, Manhattan Master Plumbers' Association; Ellis Jungman of Manhattan. Photos taken at the outing of the Greater New York Master Plumbers' Association at M. J. Kennedy's Welfare Camp

in outlining the philanthropical work Mr. Kennedy has engaged in for the past four years said, "I arranged to have the Greater New York master plumbers make this visit to permit the many members and friends of Mr. Kennedy who have contributed financially to the maintenance fund an opportunity to view the wonderful work that is being done for poor little children discharged from the city hospitals.

President McLoughlin asked Honorable William J. Flynn, commissioner of public works in the Bronx, and past president of the state association, to express the feeling of the master plumbers toward Mr. Kennedy for his work. Commissioner Flynn said, "Looking upon this gathering as a reunion of the master plumbers of the five boroughs who helped him financially, Mr. Kennedy must feel great pride

and joy in knowing that his fellow business associates are morally as well as financially interested in the great work he is doing among the poor children of the city."

Responding, Mr. Kennedy made it clear that he was overwhelmed by the spirit of the demonstration. He also said that the head of the state board of charities had visited the camp and had pronounced it one of the finest in the state.

Arriving at the camp approximately 55 children varying in ages from four to twelve years greeted the visitors with songs of welcome, the words of which had been especially arranged by the woman counselor. The camp itself presented a pleasing sight with its neat single story dormitories, dining hall and small quarantine buildings, all newly painted white. It has been thoroughly modernized with a new water supply system, drainage, and electric lighting plant.

Mr. Kennedy, originator of the idea some years ago, was only able to realize his hopes four years ago when he purchased the property with personal funds and money raised through his friends in the industry. Since then its maintenance has been assured mostly by subscriptions from master plumbers, heating contractors, manufacturers and jobbers.

◆

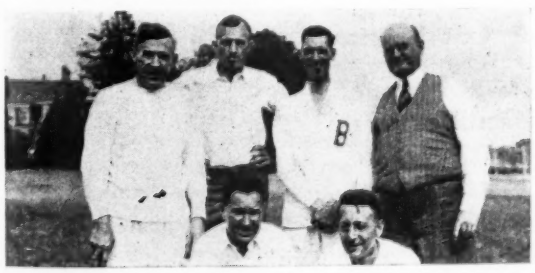
Rockford Association Banquets Retiring Secretary

Members of the Rockford Master Plumbers Association, Rockford, Ill., held a banquet on Monday evening, August 12, in honor of J. E. Withers, former secretary of the organization. Every member of the association was present.

The banquet was held at the Blomquist grill, and under the able direction of E. O. Bergren of the entertainment committee, the guests sat down to a table sagging under the weight of fried chicken, green corn, salads and desserts.

After the dinner a few remarks were made by F. R. Bailey, president of the organization, and various other members. The meeting adjourned with a rising vote of thanks to Mr. Withers for the work he has done for the association. The affair was under the able direction of William C. Mapes.

Mr. Withers has returned to South Bend, Ind., as business manager of the South Bend Society of Sanitary Engineers, a position he held several years ago.

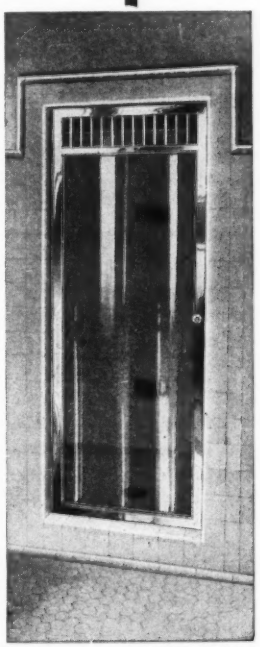


The winning ball team at the outing of the Philadelphia Plumbing and Heating Institute. Standing: John Doody of Doody's Plumbing and Heating Supplies, George Derbyshire of Derbyshire, Mack & Morgan; B. Jones and Charles Hackett of Hajoca Corp. In front: T. H. Craige of "Domestic Engineering" and H. R. Rinehart, secretary of the Plumbing and Heating Institute of Philadelphia

C & S

Shower Doors

ENCLOSURES and SHIELDS



C&S 632 Patented June 12, 1923

The *C & S* Line is complete. Your customer cannot help but find something in it that satisfies both need and taste. Furnished in Chromium Plate—Nickel Silver—or Nickel Plate. Heavy, strong and durable.

Write us today for a copy of "Shower Bath Doors," a catalog of our complete line of standardized models which contains interesting and instructive information.

Crist & Schilken Co., Inc.
Pittsburgh, Pa.

Passaic Masters Hcld 36th Outing

The Master Plumbers of Passaic, N. J., again journeyed to Blasberg's Farm, Hawthorne, N. J., on August 22 for their 36th yearly outing. Following a custom of long standing, the master plumbers, with their families and guests, began the day with an impressive automobile parade having a police escort from the center of the city to the farm. Upon arrival, teams were chosen among the master plumbers on one side and the salesmen on the other, for participation in the national pastime. A hectic game ensued, featured by home runs and fast playing at times on the part of both aggregations. The real fun came at the conclusion of the game when efforts were directed toward deciding which team had won. The salesmen decided the victory was theirs by a score of 15 to 12. The master plumbers, however, protested this good naturedly.

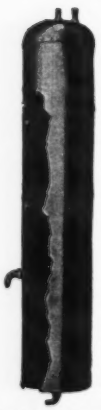
Dinner was served following the ball game and just before a broom soccer game, which the Passaic masters have made famous, was played. This game, similar to polo except that the players are afoot instead of mounted, but retaining all the excitement that goes with polo, resulted in an overwhelming victory for the master plumbers by a score of 14 to 3.

Group picture taken at the annual outing of the Passaic association

J. Lipari was the victor in the quoit pitching tournament. During the day foot races and other field sports were held for both the men and women and the association had prizes for distribution among the winners.

The committee handling the preparations and carrying out the program was comprised of the following mem-

Sepco
ELECTRIC WATER HEATER
EQUIPPED WITH—
GERSTEIN & COOPER
GENUINE COPPER TANKS



Let us send you complete information regarding Gerstein & Cooper Copper Range Boilers.

Gerstein & Cooper Copper Tanks are used in all Sepco Water Heaters as standard equipment.

The Sepco Water Heater is a high grade quality product and its manufacturers have selected Gerstein & Cooper Tanks because they want to maintain this standard of quality.

GERSTEIN & COOPER CO.
1 West Third St. :: So. Boston, Mass.
New York Office: 166 W. 72nd St., N. Y. C.
Canadian Agents:
G. Mason Price, 832 St. James St., Montreal, Quebec, Canada

bers: Roy J. Schleich, chairman; Allan J. Blair, treasurer; Harry Vogel, Joseph Baker, Barney Steinberg, S. J. Dinano, Joseph Choler and John Shedlock.

◆

San Francisco P. H. Club Plans Fall Outing

There is no reason why the forthcoming outing for the members and guests of the Plumbing and Heating Club of San Francisco, Calif., and the bay cities should not be the most popular event of its kind ever staged. At the August 22 meeting held at the Elks Club in San Francisco, President J. V. Young broached the subject which aroused keen interest. Frank J. Klimm heads the committee in charge of the details. Reservations are now being taken by Secretary Hal Sales, 230 Chronicle building, San Francisco.

Left to right: Mrs. Jack Camp, Mrs. H. P. Wilson, Mrs. J. V. Young, Mrs. Henry Pomerene, Mrs. A. G. Atwood, Mrs. F. J. Chittenden and F. J. Chittenden, Jr.; Mrs. A. G. Atwood and Mrs. R. B. Lees. Photos taken at the recent outing of the San Francisco Plumbing and Heating Club

The affair will take place at Sonoma Mission Inn, Boyes Springs, October 26 and 27, and will be featured by two big events—a dinner dance on Saturday evening and a golf tournament Sunday morning. For the non-golfers, horseshoe pitching and tennis have been arranged, and for the ladies who do not play golf there will be a bridge-tea.

Due to being unavoidably called out of the city at the last minute, Thomas Douglass, manager of the local chapter of the Heating and Piping Contractors' Association, was unable to address the membership, as scheduled. President Young spoke on the advantages of belonging to the club, concluding with a short statement relative to future plans. Informal talks were given by Thomas J. Leary and Benjamin F. Blair, local heads, respectively, of the Mueller Co. and the Standard Sanitary Mfg. Co.

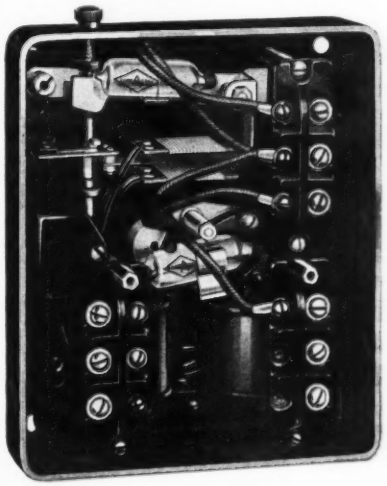
Emile Heymans, chairman of the golf committee, reported that the decision had been recently reached to stretch the "A" classification to include handicaps up to 18, thereby adding seven more members to the top class and creating somewhat more competition. Mr. Heymans announced September 19th as the date for the next monthly tournament, although the club has not yet been selected.

◆

Bronx Association Plans Outing

The Bronx Branch of the Master Plumbers Association of Greater New York will hold its annual outing this year at Karatsonyi's Glenwood Landing, Long Island, N. Y., on Wednesday, September 18.

Extra Convenience and Extra Safety



The No. 77 Lockswitch System

A NEW convenience for the installation man is found in the new improved No. 77 Lockswitch. There is more room for wiring, the entire mechanism can be removed from the case, additional convenient knockouts are provided, color-coded terminals help the installer to wire quickly and without error. Now a line opening switch is built-in in conjunction with the reset, eliminating the necessity for a separate snap switch on the burner.

The motor switch is mounted on monel metal bearings. This means quieter and more positive operation with much longer life. By the addition of a second heating element on the warping strip, Time-O-Stat engineers have made the new improved Lockswitch safe even against itself. Should the motor switch stick, or should the mercury in it "hang," this element comes into play and shuts down the burner.

The New No. 48 H Stackswitch, in conjunction with the new Lockswitch, provides reignition after a timed shut down interval following flame failure from any cause. The ignition interval limits are easily adjustable in the field.

In brief, the new Lockswitch System has everything you can ask in accurate, completely safe and thoroughly dependable oil burner control. It is adaptable to any power burner using any type of ignition, either for mounting on the burner or on the wall.

We shall be glad to send you full information about the new Lockswitch or other Con-Tac-Tor controls for oil burners. A request will place you under no obligation.

TIME-O-STAT
CONTROLS COMPANY
ELKHART, INDIANA

Successor to

Absolute Con-Tac-Tor Corporation **Time-O-Stat Corporation**
Leachwood Company **Cramblet Engineering Corporation**

Manufacturers of AUTOMATIC CONTROLS for Oil Burners—Gas Burners—Coal Burners—Electric Refrigerators—Furnace Fans—Mechanical Stokers—Industrial Ovens—Ice Machines—Unit Heaters—Water Heaters...also...Sign Flashers—Mercury Switches—Electric Heaters—Corrugated Metal Bellows—Evenheaters.

Group picture of members and guests attending the annual convention of the Wisconsin Society of Plumbing Inspectors, at LaCrosse

Standardization and Affiliation Movement at Wisconsin Plumbing Inspectors' Convention

WHEREAS, Standardization of laws, rules and regulations of plumbing materials and appliances is one of the aims of our society, and

"WHEREAS, Standardization of materials and uniformity of regulations are practicable and economically sound, and

"WHEREAS, The Wisconsin state plumbing code has brought this about to a very satisfactory degree with results beneficial to the citizens of our state,

"THEREFORE, BE IT RESOLVED, That we recommend that all municipalities adopting plumbing and drainage ordinances take as a basis the state plumbing code, adding such sections or sub-sections as local conditions may require for the best interest of the public."

Such was the spirit which moved the members of the Wisconsin Society of Plumbing Inspectors attending their ninth annual convention at LaCrosse, Wis., on August 15 and 16. The adoption of the above resolution constitutes one of a series of steps in the direction of standardization which, in time, are designed to bring about complete uniformity throughout the state in the matter of plumbing regulations. This includes, in addition to uniformity of the more general features of plumbing regulation, standardization of the details such as style in presenting the code, classification and numbering and lettering the sections. The final result of this effort will be of inestimable value to all concerned. In the case of the architect who designs buildings in more than one city, in the case of the state plumbing inspector who covers in his circuit a number of cities, in the case of the plumber whose work is not confined to one locality and in the case of the public whose concern is in health, convenience and low cost, standardization will serve to eliminate many of the present difficulties. As brought out at the meeting, standardization in plumbing and plumbing regulations may be compared to standardization of automobiles. Both fill a public need which, fundamentally and with few exceptions, is not subject to location.

Ninety-eight Per Cent Uniformity Expected

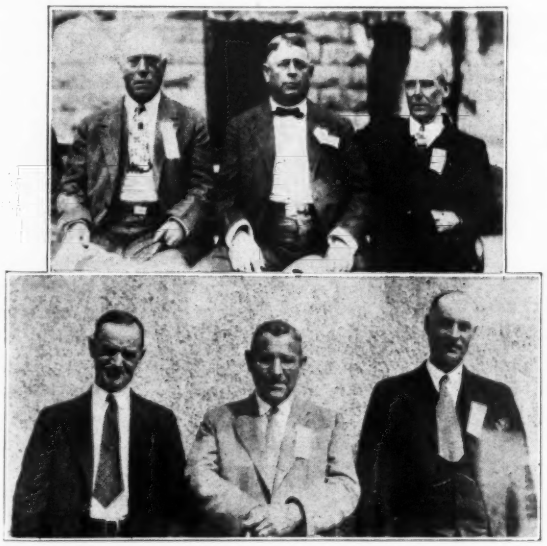
Where local conditions are such as to require the addition of special provisions or where sentiment calls for more specific or stringent regulations it is expected that these will be added as subdivisions, thus preserving the continuity and uniformity feature of the code.

A program of this kind may appear to many as decidedly ambitious, especially in view of a state

A. J. Hanneman, president; L. E. Travis, 3rd vice president; H. M. Hoover, 1st vice president; E. F. Klement, 2nd vice president, and Eugene Morse, secretary-treasurer, all of the Wisconsin Society of Plumbing Inspectors

ment made by Frank R. King, state plumbing inspector and sanitary engineer of Wisconsin, that "Wisconsin should in the next few years have 98 per cent state-wide uniformity in plumbing practice, design, materials, methods of construction and supervision." However, after learning of the background of the present regulations, it does not appear unreasonable, first legislative action on this subject dating back to 1897.

The extent of the present plumbing regulation movement in Wisconsin is such as to include, according to J. H. Owens of Racine, 71 cities and villages having codes. This is in addition to the blanket code of minimum requirements of the state and three



Top row: E. H. Disch, Wauwatosa; R. E. Hasselkus, Dousman, and A. G. Jamesson, LaCrosse.—Bottom row: Frank R. King, Madison; W. J. Meltzer, Madison, and Jacob Scheck, Sheboygan

township codes in the lake regions. At the present time there are from 20 to 30 local codes pending. Many of those now in force and those awaiting adoption are copies of the state code. This, in some measure, simplifies the standardization problem. If it were not so, attempts at making uniform regulations would be much more difficult.

Affiliation to Be Made

A second resolution passed at the meeting provides for the affiliation of the society with the League of Municipalities. The significance of this action is that the society receives increased prestige through its connection. The League of Municipalities has a membership consisting of mayors, aldermen, etc. A number of societies having personnel and aims similar to those of the Wisconsin Society of Plumbing Inspectors have joined the league in the form of a section; they are city engineers, city attorneys, superintendents of waterworks, and others have made application. The following are the outlined advantages of such an affiliation:

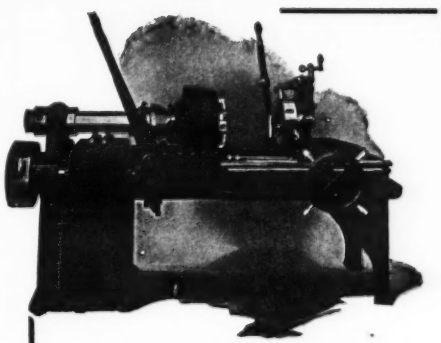
1.—Closer contact with elective villages and city officials.

Fretz-Moon

FRETZ-MOON TUBE CO.
BUTLER, PA.

It is easy to get good pipe—just ask for, and insist upon, FRETZ-MOON!

PIPE
1/8" OUR SPECIALTY



PEERLESS B&K DUPLEX P·D·Q·C

Steady—Dependable

We do not make extravagant speed claims but when shop after shop reports best results with Bignall & Keeler machines and Peerless dies, we are compelled to listen.

If interested in threading tubular goods, it will be worth your while to investigate the Bignall & Keeler line.

May we send literature?

BIGNALL & KEELER MACHINE WORKS
of the N. O. Nelson Mfg. Co.
EDWARDSVILLE, ILLINOIS

PEERLESS B&K DUPLEX P·D·Q·C PEERLESS B&K DUPLEX P·D·Q·C

Only in CASH ACME Automatic Pressure Contol can you obtain these features

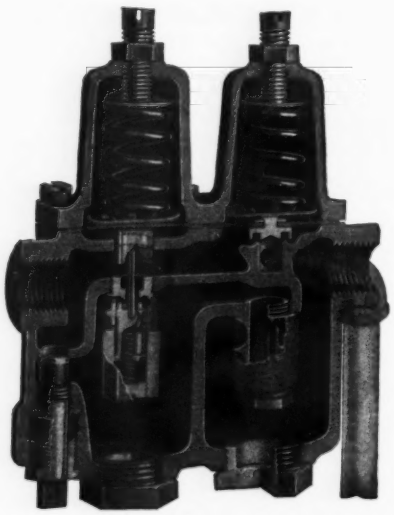
1—Simplicity of design making for easy service.

2—Dual strainer protection preventing dirt from entering and damaging the working unit.

3—The by-pass feature that allows quick filling and protects the regulator seat.

4—The sensitivity and long life of rubber diaphragms.

5—Quality throughout with no thought of cutting corners in either material or workmanship to meet a price—rather to build the best control for the job that can be had.



On your next hot water job try a CASH ACME Control and obtain profits that stay put.

A. W. CASH VALVE MFG. CORP.
616 N. Water St. Decatur, Illinois

Sales Agents: Chas. H. Fiske, 431 So. Dearborn St., Chicago, Ill. Telephone Harrison 4968.

Eastern Sales Agents: H. M. Flemming Co., 30 Church St., New York City, N. Y. Telephone Cortlandt 1553.

CASH ACME
IT'S AUTOMATIC

2.—Increased prestige.
3.—Opportunity to attend the convention at one time for discussing matters of common concern.
4.—Means for the publishing of the society's minutes and papers in the "Municipality," the official publication of the League of Municipalities.

Several disadvantages were also enumerated but the adopted resolution indicated it was the society's opinion that an affiliation is desirable.

Officers Elected

The election of officers placed the following men in the respective official positions of the society for the coming year: A. J. Hanneman, Wisconsin Rapids, president; H. M. Hoover, Beloit, 1st vice president; E. F. Klement, Ft. Atkinson, 2nd vice president; L. E. Travis, Rice Lake, 3rd vice president, and Eugene Morse, Eau Claire, secretary-treasurer. The convention city for next year will be Wisconsin Rapids.

In addition to a trip of inspection through the plant of the Trane Company on the afternoon of the first day of the convention, a considerable amount of time was devoted to the discussion of subjects of interest and importance to the various inspectors in carrying on their regular duties. The subject which caused the greatest amount of discussion was that of proper venting of two closets, one above the other, in a two-story building, the question being whether or not it is necessary to vent the lower fixture. On the face of the matter it might seem that there is not much to the question. However, when all of the many possible hook-ups are considered which are possible and which the plumbing inspector meets in the course of his travels and must be conversant with, the problem becomes quite involved. More along this line is scheduled to be taken up in a specially prepared article at an early date in DOMESTIC ENGINEERING.

Questions and Discussion

Another interesting subject which was brought up indicating the changes which are constantly occurring in the industry due to development had to do with the draining of condensation water from chimneys.

The attention of the convention was directed to faulty closet bowls and the possibility of approving same in making inspections. The fault lies in a slow leak in the seal which permits the trap water to drain out slowly. An instance was cited where a bowl was flushed and found satisfactory, apparently, by an inspector. By chance, it happened that the inspector returned and found the trap water almost gone. This was some fifteen minutes later. Further careful investigation discovered the presence of a slow leak.

Discussion also included the subject of winter difficulties with vent pipes above the roof where frozen condensation, in time, closes the vent and stops its operation. Frank R. King told of one instance where difficulty was encountered in the operation of the plumbing equipment in one section of the Capitol buildings at Madison. Inspection re-

vealed a vent pipe which was frozen closed completely, at the top. The solution, temporary, was in punching out the bottom of an empty nail keg, placing it so that it enclosed the vent above the roof and stuffing rags between the keg and the pipe. Along with this discussion was the exhibition of a type of flashing which provided an air space between it and the pipe, lapping over the top of the stack, thus being designed to eliminate the above mentioned difficulty of closing the stack by freezing.

Apprentice Instruction in Wisconsin

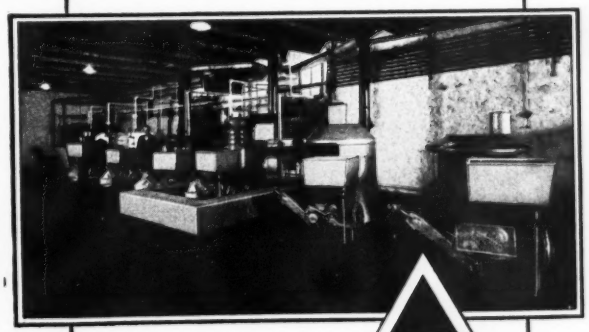
Believing that the welfare of the plumbing industry is dependent upon the proper training and instruction of the apprentices of today, who will be the masters of tomorrow, the subject of apprentice instruction is brought up and stressed at practically all meetings of plumbers in Wisconsin. This meeting was no exception and the subject was covered by M. M. Hanson, itinerant instructor, and Frank R. King. The discussion was led by Walter Simon, supervisor of apprentices. The result of this general interest in apprentices has been the formation of four circuits, each covered by an itinerant instructor, which includes 16 cities and towns outside of Milwaukee, and which, at the close of the school year in June, had provided instruction for 143 apprentices during the year. At the Milwaukee Vocational School an additional 142 apprentices were enrolled up to the end of the semester in June.

As stated by Mr. Hanson, the object of instruction in the itinerant circuits is not to prepare the learner for the journeyman's examination. The object is to take the apprentice while he is working and teach him the theory of the trade based on the Wisconsin state code. Also, he pointed out that the underlying objective is to raise the standard of the trade. Still another objective of the school program is to promote a co-operative feeling among the journeymen, masters, parents of the apprentices and the plumbing inspectors.

It was brought out that in apprentice instruction there is a strong desire for and need of co-operation from the master plumber. This is provided for in the trade advisory committee composed of two master plumbers and the instructor, whose duty is to inspect the school, pass on apprentices who have finished their training, and see that the attendance is as perfect as possible.

Among those who were present at the convention whose pictures appear in the group at the head of this report are, reading from left to right: A. J. Hanneman, Wisconsin Rapids; C. J. Saile, Rice Lake; L. E. Travis, Rice Lake; G. E. Gauslin, Appleton; E. F. Klement, Ft. Atkinson; E. Morse, Eau Claire; E. Morse, Jr., Eau Claire; Miss Owens, Racine; F. R. King, Madison; Mrs. E. Morse, Eau Claire; Miss A. J. Jamesson, La Crosse; W. J. Meltzer, Madison; Mrs. A. G. Jamesson, La Crosse; Mrs. F. R. King, Madison; Mrs. J. Scheck, Sheboygan; J. Scheck, Sheboygan; Mrs. J. H. Owens, Racine; Mrs. R. E. Hasselkus, Dousman; A. G. Jamesson, La Crosse; E. H. Disch, Milwaukee; R. E. Hasselkus, Dousman; J. H. Owens, Racine; R. Henke, Wauwatosa; G. W. Slightam, Janesville; and J. A. Trane, La Crosse.

TESTED PROTECTION!



AUTOMATIC ANTHRACITE HEAT

WHAT IT MEANS TO YOU!

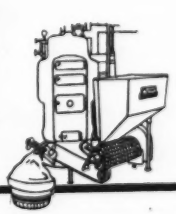
IN the laboratories where experiments are continually being conducted for the possible betterment of The ELECTRIC FURNACE-MAN, it is also put to exhaustive tests. These tests have time and again proven its worth and they are your guarantee of "Tested Protection." When you install The ELECTRIC FURNACE-MAN you KNOW that it will accomplish its work—safely—economically—efficiently.

Tested Protection does one other thing for you. It assures you that profits made will stay profits and not turn to losses through necessary "free servicing" and "trouble-shooting" which in turn lead to dissatisfied customers.

The ELECTRIC FURNACE-MAN burns ANTHRACITE—buckwheat or rice. Used in thousands of homes. Fits any heating plant. Ideal for hot water supply.

Let us give you complete details of the ELECTRIC FURNACE-MAN and tell you also how we can help you.

The Electric Furnace-Man



Patented Product of

DOMESTIC STOKER COMPANY

Gillespie Building, Seven Dey Street, New York

Kansas Zone Association Has Picnic

Zone 11 of the Kansas Master Plumbers' Association, which is made up of eleven counties of Southeast Kansas, held its annual picnic at Hitch's cabin, near St. Paul, Kans., on July 27. A large number of Southeast Kansas master plumbers were there with their families, eighty-five in all being present.

The Hitch cabin is an ideal place for a picnic and zone 11, which ordinarily meets every last Saturday night of each month. Fred Sellars, of Independence, is the governor of this zone and he always manages to have a good attendance at the meetings, which have proved interesting to all.

Carl McGregor of Winfield, president of the Kansas Master Plumbers' Association and W. C. Kerwin of Joplin, Mo., with their families, were guests. M. M.

Group picture taken at the annual picnic of Zone 11 of the Kansas Master Plumbers Association, held at Hitch's Cabin

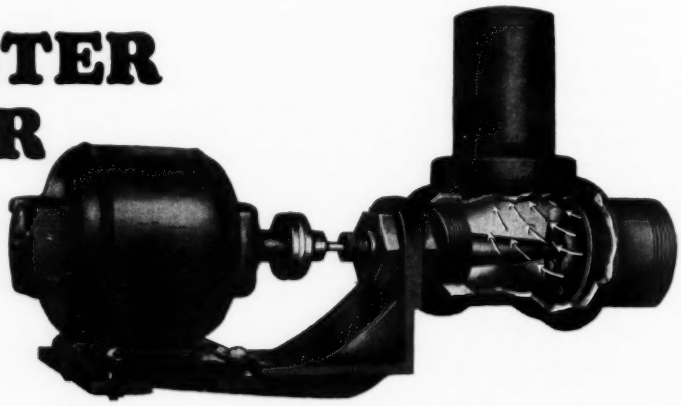
Mr. Hitch's hospitality was appreciated very much by all who attended. Mr. Hitch is a master plumber at Girard, Kans. The day was spent in swimming, canoeing, fishing, horseshoe pitching, bridge and other sports and an enjoyable time was had by all.

The picnic took the place of the regular meeting of Hartzell, one of the "old stand-bys" and past president of the Kansas State Association, proved himself the champion fisherman without a fish story.

The next meeting of zone 11 will be held at Parsons, the last Saturday in September. A large attendance is expected.

The Wise Heating Contractor now uses Forced Circulation on EVERY Hot Water Job!

The ROCHESTER CIRCULATOR



Costs less, installed—

Costs less to run—

And is built to last!

The Rochester Circulator does not interfere with Natural Flow

Full pipe areas are maintained and there are no check valves to stick

The *only* Circulator made in every pipe size,—from 1½" to 12". Get the benefit on *your* jobs of the perfect heat range and economy of hot water—with *instant* service in *every* radiator—and save labor and material on the installation. We have a valuable book for you—"The Universal Fault of Hot Water Heating Systems *and the Cure*." Send for *your* copy today.

THE ROCHESTER CIRCULATOR CO. 3092 Culver Road, Rochester, N. Y.

Elizabeth Association Holds Outing

The members of the Master Plumbers Association of Elizabeth, N. J., spent August 17 at the Elks Club, Oakwood Heights, Staten Island, N. Y., on their yearly outing. There were, together with guests, about seventy persons present to enjoy the affair. Games occupied the excursionists first, then a luncheon was served in the open.

The ball game between the master plumbers and salesmen, the main event of the day, came next. This resulted in an overwhelming victory for the salesmen, who won by an 18 to 7 score. The losers, however, had a perfectly good alibi, claiming that the salesmen used a professional pitcher. The game, nevertheless, was exciting throughout, a number of home runs being made and several spectacular plays executed by both sides.

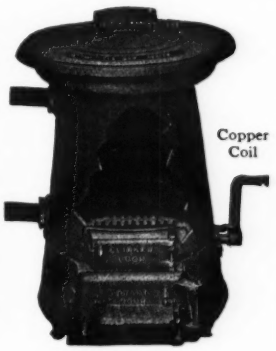
The games earlier in the day featured foot races and a golf match on a miniature nine-hole course. Valuable prizes were awarded the winners.

Morris Esocoff, chairman of the entertainment committee, was assisted by F. C. Conkey, executive secretary of the Elizabeth association. Dinner concluded what was considered a most enjoyable day, and the prizes were awarded at this time.

Among the officers of the state association present were A. C. Krieger, president, and W. T. J. Orriss, secretary.

Top row: Gustave Rees, E. Schneider, Jas. Arace, Jas. Dederick. Middle picture: Master plumbers' losing ball team. Bottom picture: George L. Bird, state trustee; James F. Hardiman, treasurer of Elizabeth association; William T. J. Orriss, state secretary; Morris Esocoff, chairman of the entertainment committee. Photos taken at the outing of the Elizabeth, N. J., Master Plumbers' Association

CLE-BAR
Water Heaters

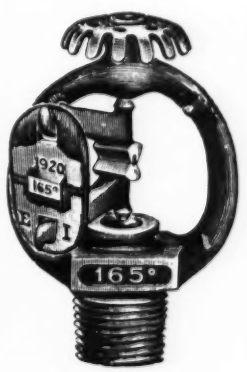


You can end the home owners' hot water heating troubles once and for all, with Cle-Bar Heaters. One shovel full of coal a day will give him all the hot water he needs for home use.

Why not write us today for information about this money and trouble saving heater?

CLEGHORN CO.
86 Broad St. :: Boston, Mass.

C · S · B
SPRINKLER HEADS



C. S. B. Sprinkler Heads are accepted by all authorities as positive protection against fire.

They are fool proof and trouble proof. Each is stamped with fusing degree and date of seal.

C. S. B. SPRINKLER CO.
86 Broad St. :: Boston, Mass.

LEONARD
WATER MIXING
VALVES

There is a proper Type Leonard Thermostatic Water Mixing Valve for every installation.

Write us telling us the amount of mixed water needed—the kind of installation and other details and we will tell you which type valve to specify.

LEONARD-ROOKE COMPANY
Providence, Rhode Island

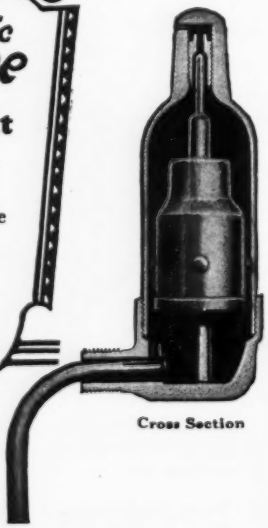
THE
"Air-Out"
Syphon
Thermostatic
Air Valve

A Large Float

Heavy Cast Brass Base

Free sample valve for testing for the asking

All metal, non-adjustable



Cross Section

The Last Word~ In Syphon Air Valves

Guaranteed Five Years

NEW YORK AIR VALVE CORP.
476 Broome St. • 44 Wooster St.
New York, N. Y.

Utah Association Holds Outing

The master plumbers and jobbers' representatives surprised the journeymen and helpers for the second year in succession by trimming them to the tune of 18 to 7 in the baseball game at the annual outing of the Utah State Association of Sanitary and Heating Engineers, which was held at Lagoon, on August 17.

The masters started by pounding the horsehide to all corners of the lot in the first inning, counting

Top row: J. W. Dudley, past secretary of Utah State association; Parley G. James, president of Salt Lake association; A. H. Higham, president of Utah association; Joseph Carthey, treasurer of state association and star catcher for the masters. Bottom row: Peter P. Erskine, association official for more than a score of years, with his son and daughter; the horseshoe pitching champions, Ray Powers and Earl Powers of Crane Co.; Paul Gehring of the Mountain States Supply Co. Photos taken at the outing of the Utah State association

eight tallies before finally being retired. After that the journeymen settled down and a run or two per inning was the best that the masters could get.

The teams lined up as follows:

Masters & Salesmen		Journeymen	
Carthey	c.	Anderson	c.
Edgar	p.	Burns	p.
Tingey	1b.	Briggs	1b.
Powers	2b.	Swenson	2b.
Higham	3b.	Clement	3b.
Gehring	ss.	Davidson	ss.
Dudley	rf.	Erskine	rf.
Stevens	cf.	Grow	cf.
Powers	lf.	Anderson	lf.

However, the journeymen retaliated by winning the tug-of-war from the masters' team composed of Ralph D. Evans, Robert Snedden, Ambrose H. Higham, Herman Schrader and Simon Gentner.

The salesmen walked away from the field in the horseshoe pitching contest, Ray and Earl Powers of Crane Co. proving to be the sharpshooters.

Following the sports program the guests adjourned to the bowery where a picnic lunch was enjoyed. Dancing was held in the evening.

The outing was under the general direction of the officers, including Ambrose H. Higham, president; Alex Mortensen, vice president; Ross Dudley, secretary; J. F. Carthey, treasurer, and the following members of the board of governors: A. E. Hurd, Henry G. Blumenthal and Val W. Palmer.

Plans are now under way for the semi-annual convention, according to President Higham. This affair is scheduled for September 21 at Salt Lake City.

Kalamazoo Holds Successful Outing

The annual outing of the Kalamazoo Master Plumbers Association was held on Saturday, August 17, at Pine Lake, Mich., with approximately 60 persons present, consisting of members and their families, wholesalers, manufacturers and their representatives.

A rather close ball game between the master plumbers and salesmen marked the beginning of the day's entertainment, in which the salesmen out-slugged the masters to win by a score of 9 to 6. J. C. Wall, pitcher for the masters, held the salesmen on even terms until the sixth inning, when the salesmen staged a rally to bring in the winning runs. L. A. Schoolmaster acted as umpire. The teams lined up as follows:

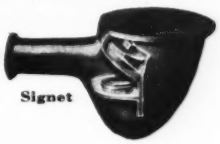
Plumbers		Salesmen	
C. L. Mahoney	c.	Leo Muryne	c.
J. C. Wall	p.	Fred Murray	p.
W. A. Johnson	1b.	C. H. Schoolmaster	1b.
O. L. Smith	2b.	C. A. Bowen	2b.
Fred Hotop	3b.	J. Benzenberg	3b.
H. I. Kivven	rf.	G. D. Ingrahm	rf.
E. Goodell	cf.	L. E. Spear	cf.
H. Wall	lf.	John Clark	lf.
Neal Boeckeloo	ss.	William Farrell	ss.

The ladies took part in various contests, including nail driving, bean carrying, putting, etc. Mrs. Otis Smith was first in the nail driving contest with Mrs. Harold Wall a close second. The bean carrying contest was won by Mrs. Harold Wall and Mrs. L. A. Schoolmaster won second place. Mrs. W. A. Johnson was first in the putting contest and Mrs. John Clark, second. Elsie Benzenberg won the pitching game in the children's event.

The men provided a thrilling sack race with W. Farrell, first, Neal Boeckeloo, second, and C. Schoolmaster,

Top picture: Salesmen's team. Back row: C. H. Schoolmaster, Leo Muryne, William Farrell, L. A. Schoolmaster, L. E. Spear. Front row: G. D. Ingrahm, J. Benzenberg, C. A. Bowen, John Clark. Bottom picture: Plumbers' ball team. Back row: Neal Boeckeloo, J. C. Wall, O. L. Smith, E. Goodell, H. I. Kirven. Front row: Fred Hotop, H. Wall, W. A. Johnson, president of Kalamazoo association and secretary of Michigan association, C. L. Mahoney. Photos taken at the outing of the Kalamazoo Master Plumbers' Association

50,000 of our Backwater Trap Floor Drains now in use



There is *a good profit for you* installing these drains in homes where Backwater *gives* trouble.

Ask Your Jobber or Write Us Direct

CRAMPTON-FARLEY BRASS CO.
Kansas City, Mo.

Plumbing Specialties

CREST
TRADE MARK

Heating Specialties

"The World's fastest growing Specialty House"

CREST MFG. CO. INC.
108-110 W. 25th St. NEW YORK

Air-Tight Steel Tank Co.
PITTSBURGH, PA.

TANKS

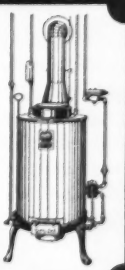
TANKS FOR: High pressure gas and air storage— Pneumatic water systems—Gasoline and oil storage—Oil burning equipment—Open top—Welded. ATSCO Genuine Copper Brazed tanks for high pressure—the tightest, safest, strongest tank it is possible to construct by any known process. A.S.M.E. code tanks.

Duo-tor

A New Home Service

An Automatic Garbage Burner—An Automatic Water Heater—Combined into one compact efficient unit.

Every home and apartment dwelling is a prospect for this *double duty* appliance.



Write for complete information

The Duo-tor Manufacturing Co.
24 S. Canal St. Dayton-Ohio

third. The men's wooden shoe race was won by J. Benzenberg, with W. Farrell second.

After a splendid dinner, L. E. Spear of the Humphrey Co. awarded the prizes to the winners with the able assistance of C. L. Mahoney and J. C. Wall.

◆

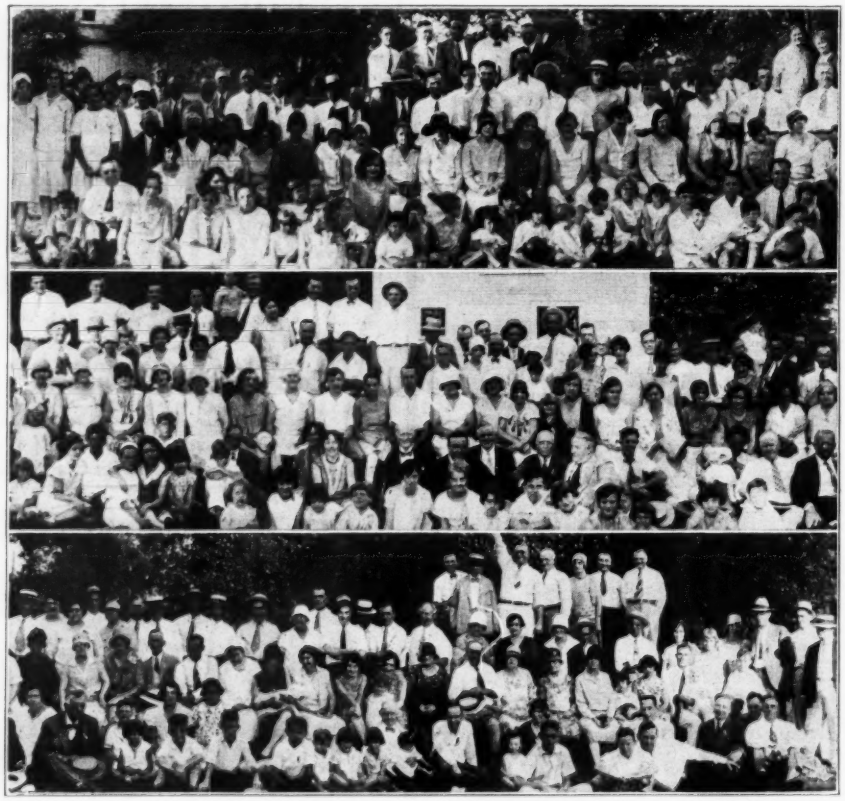
St. Louis Association Holds Large Outing

The St. Louis, Mo., Master Plumbers Association held its annual outing at Ferguson Country Club, on Saturday, August 17. About six hundred persons were present, including master plumbers, their families and invited guests. Horse shoe pitching was bers, a cracker and whistle contest for boys, a walking race for members, potato race for ladies and a horseshoe pitching contest for members.

◆

St. Paul Masters Enjoy Picnic

The annual outing of the St. Paul Master Plumbers Association, St. Paul, Minn., was held at Sunset Beach, McCarron's Lake, on Wednesday, August 7. The affair was a success in every way and the outing committee, composed of Walter Steimer, chairman, Thomas Shetka, Earnest Bossard and Arthur Ekstrom, were well repaid for their efforts by the large attendance.



Group pictures taken at the outing of the Master Plumbers' Association of St. Louis, Mo.

the principal sport of the master plumbers, and nearly every master tried his skill at the game.

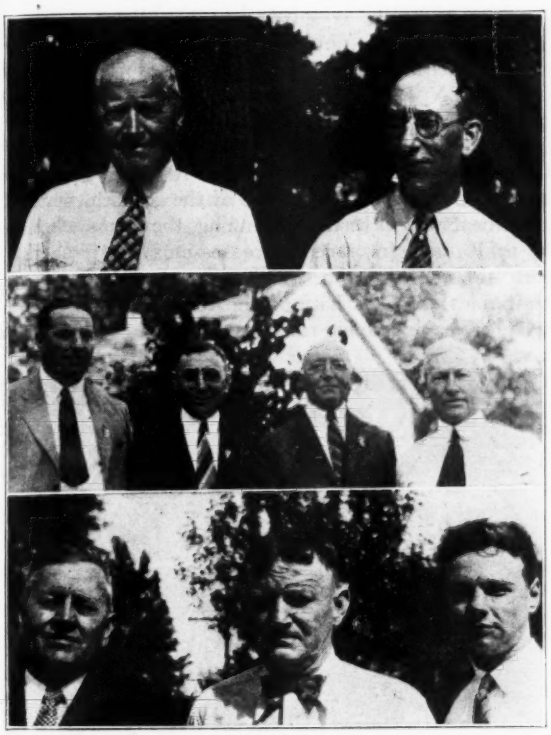
Ten events were arranged so that every one present could take part in something, and have a chance to win a useful prize. The tennis courts and a large swimming pool were well patronized.

Refreshments were supplied in the form of a barbecue. A generous supply of spare ribs, fresh hams, smoked hams and legs of lamb, were cooked and served along with the usual barbecue trimmings. Plenty of benches and shade trees provided places for the "old timers" to rest and visit. The main attraction in the evening was the dance hall in the club house, where picnickers enjoyed dancing.

The various events on the program included dropping clothes pins in a milk bottle, a flour blowing contest, shoe scramble for boys, balloon race for girls, pie pan and potato race for the wives of mem-

In the morning a diamond ball game was played between the master plumbers and the journeymen, which the former bagged after an extra inning struggle by the score of 5 to 4. The feature of the game was the excellent pitching of Edward Donovan of the St. Paul branch of Kellogg-Mackay Co., who was recruited by the masters when their regular hurler failed to appear.

After dinner the crowd reverted to the ball grounds for the feature event of the day, the annual game between the master plumbers and the salesmen. Harry Nonnemacher, who in his younger days was the best pitcher in St. Paul, was pitted against a young man by the name of Doyle for the salesmen. After a scoreless first inning the game developed into a see-saw affair, with the masters finally victorious by a score of 9 to 8. Louis Zuehls, who played ball when most of his teammates were mere children, played a bang-up brand of ball for the master plumbers. He contributed three hits

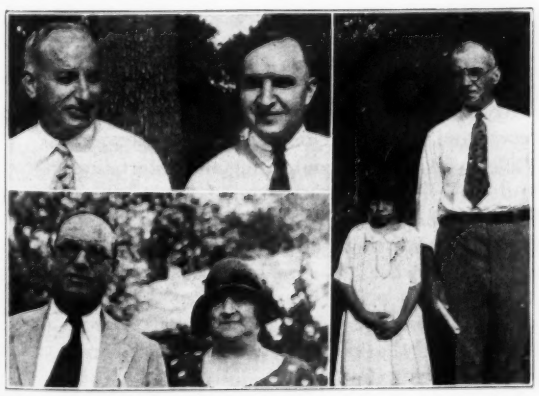


Top picture: J. J. McCue, chairman of entertainment committee, and E. J. Blake, secretary of St. Louis association. Middle picture: William J. Hebenstreet, Kansas City manager, Kellogg-Mackay Co.; John Heinkel, president, Blake Specialty Co., Rock Island, Ill.; Alex Pierce, vice president, N. O. Nelson Mfg. Co., St. Louis, and C. S. Moynihan. Bottom picture: James J. Noble, Charles Burgess, L. P. Hunstein, gate committee. Photos taken at the recent outing of the St. Louis Master Plumbers' Association

for extra bases and played a stellar game in center field with four difficult put outs. Reuben Anderson thrilled the crowd with two home runs.

Mr. Goldberg of Cochran-Sargent Co. played an excellent game for the salesmen, contributing four hits in the same number of trips to the plate.

In the afternoon a number of racing events and other athletic contests were conducted.



Upper left picture: E. J. Stumpf and A. W. Marx. Lower left: Mr. and Mrs. N. J. Seibel. At right: P. D. Finn, president of St. Louis association, and daughter, Doris. Photos taken at the outing of the St. Louis Association of Master Plumbers

We'll Help You Sell Them!

YOU can make some real money by selling Armstrong Radiator Shields and Enclosures. They offer you a sound and practical opportunity in one of the fastest-growing markets in America. A tried-and-tested common-sense plan has been perfected which will help you to get orders for Armstrong Radiator Shields and Enclosures. It is free to Armstrong Dealers.

Extra Sales PLUS Material Profits

Modern interiors must be artistic, colorful, harmonious and practical. This fact applies to homes, offices, clubs, institutions, hotels, etc. Armstrong Radiator Shields and Enclosures meet these requirements. They offer you a most unusual money-making opportunity.

Note these outstanding advantages of Armstrong "Type A" Radiator Shields: Top is made of heavy, 14-gauge furniture steel; end brackets of 12-gauge, while the back is made of 24-gauge steel with an absolutely tight joint between the top and the back to prevent escape of air, dust and dirt. Hinged, removable top, full back, humidifying pan. Entire top of shield is reinforced by a ¾x¾x⅛ steel angle, cross-braced, with a slot in each end piece to admit the U-bolt for fastening to radiator. Standard finishes are: American Walnut, French Walnut, Brown Mahogany, Red Mahogany, Golden Oak, Old Ivory and White.

Pays for Itself Many Times

Sales are clinched quickly when you point out to prospective customers that savings . . . . in many directions . . . .more than pay the initial cost of an Armstrong Radiator Shield or Enclosure. For example: savings in fuel . . . in elimination of frequent cleanings of curtains and walls, and in re-decoration of walls. Also, the humidifying feature means less sickness . . . . with consequent important savings in medical attention and medicines.

Dealer Sales Franchises are limited. Write today for details.

THE THOMAS & ARMSTRONG COMPANY
Radiator Shield Division LONDON, OHIO

Special features insure substantial sales volume

Write today for details of our Dealer Sales Franchise

Armstrong Radiator Shields & Enclosures

Oldest New York Bank Selects Oldest Manufacturers to Supply Hot Water Heaters

The Bank of New York & Trust Co.—the oldest bank in New York State—chose Patterson Heaters to furnish hot water for their new 32-story home.

With an experience of 145 years back of them, the officials of this bank know that age is a safeguard in judging the reliability of a manufacturer. For no manufacturer can stay in business over a long period of years unless his products give entire satisfaction. Consequently Patterson Hot Water Heaters, which are made by the country's oldest heater manufacturers, were installed.

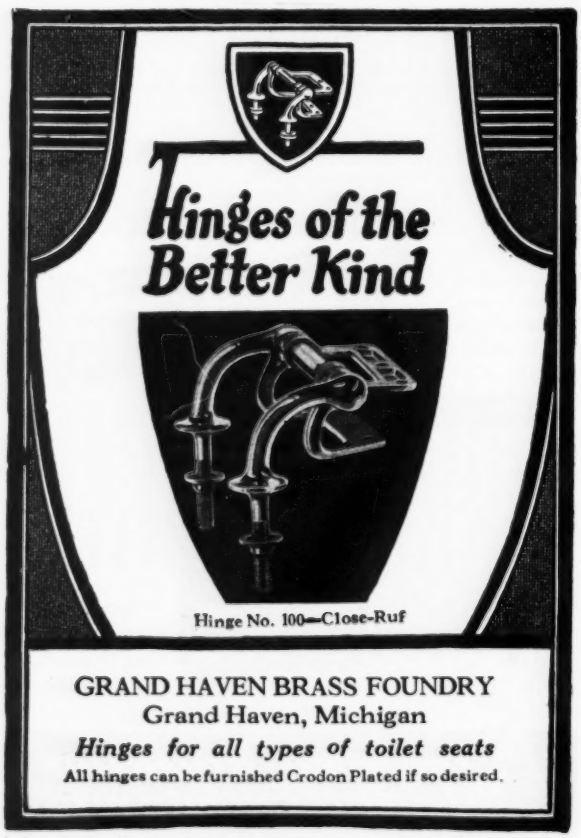
When you want to be sure of getting all the hot water required, as hot as required and as quickly as required, you will find it safe to follow the example of this conservative old institution and install the "Patterson."

May we send you our catalog?

Benj. W. Morris, Architect; Werner Nygren, Consulting Engineer; John McMillan Co., Inc., Plumbing Contractors.

THE PATTERSON-KELLEY CO.
106 East 40th St. New York, N. Y.

Patterson HOT WATER HEATERS


Hinges of the Better Kind
Hinge No. 100—Close-Ruf
GRAND HAVEN BRASS FOUNDRY
Grand Haven, Michigan
Hinges for all types of toilet seats
All hinges can be furnished Crodon Plated if so desired.

Orange Masters Enjoy Outing

A baseball game, unusual in several respects, featured the outing of the Master Plumbers Association of the Oranges (N. J.), held on August 15 at Bertrands Island, Lake Hopatcong, N. J. The game, which was between association members and salesmen, resulted in a victory for the latter by a score of 11 to 10, after going over into extra innings. At the end of the seventh, which by agreement was to be the last inning, the teams were tied 10 to 10, and for three more sessions the pitchers of both sides bore down and prevented further scoring until the salesmen's half of the tenth when they managed to get the winning run across the plate. Fred Kunz,

Top row: A. C. Krieger, president of New Jersey State Association, Mrs. A. C. Krieger, Mrs. George Brenner, George Brenner, president of Oranges association. Bottom picture: The losing ball team of master plumbers. Photos taken at the outing of the Master Plumbers' Association of the Oranges

playing left field for the master plumbers, sprained his ankle while running the bases late in the game and was forced to retire. The line up of the two teams follows:

Plumbers		Salesmen	
G. Buggeln	c.	J. Mackinson	c.
A. M. McChesney	p.	W. White	p.
F. Hoffman	1b.	E. Robinson	1b.
C. Kunz	2b.	R. Patzig	2b.
A. Berg	rf.	L. Sudhans	rf.
F. Kunz	lf.	L. Lentz	lf.
A. Bornstein	cf.	F. Obrecht	cf.
T. Chalmers	3b.	K. Cosgrove	3b.
T. J. Berg	ss.	J. Cardiello	ss.

George Brenner was umpire; Frank Ebert, scorekeeper, and D. Petrucelli, assistant scorekeeper.

The two members comprising the entertainment committee—A. T. Brody, chairman, and A. G. Trapper—received much praise for their efforts in arranging the affair. Upon arriving, lunch was first on the program, following which a treasure hunt was held, resulting in eleven valuable prizes being distributed by the association. The next event was a tug-of-war between master plumbers and the salesmen, which resulted in a victory for the master plumbers.

Swimming was enjoyed by quite a large number, after which everyone gathered in the dining room where a delicious sea food dinner was served.

A number of prominent master plumbers from other

parts of the state were present, numbered among whom were A. C. Krieger, state president, with Mrs. Krieger; former state secretary George L. Bird, with Mrs. Bird; A. A. Taaffe, past national director, and William F. Beck, accompanied by Mrs. Beck.

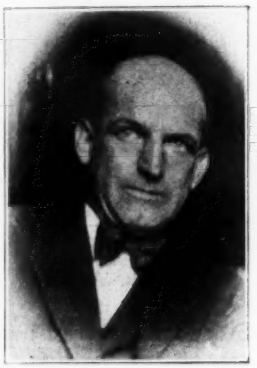
◆

Bay County's Conference Meets in San Francisco

Leading master plumbers of Northern California got right down to cases in their consideration of the broad aspects of business, both actual and potential, when the Bay Counties Conference assembled at the Elks Club in San Francisco on the evening of July 29. Meetings are held throughout the territory served on the last Monday of every five-Monday month.

The keynote of the gathering in San Francisco was "home modernizing," virtually all speakers agreeing that the rejuvenation of substantially built but hopelessly out of date residences offered the one way out in the matter of stabilizing business conditions.

President William J. Monihan of the San Francisco



J. V. Young, Vice president

Wm. J. Monihan, Pres., San Francisco

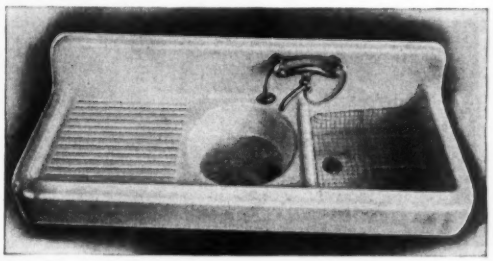
Master Plumbers Association introduced Chairman George Stoddard of Berkeley. The roll-call indicated a representative attendance of masters from San Francisco, Oakland and Berkeley and many outlying sections such as Palo Alto and San Jose on the south, Fresno on the east and Walnut Creek to the north.

The principal speaker was Frank Cox, sales manager of the Peerless Built-In Fixture Co., of Berkeley, whose talk was preceded by the showing of lantern slides dealing with home modernizing and indicating very pointedly, both with pictures and the printed word, the advantages in going after this class of work.

In his talk Mr. Cox lead up to his subject by indicating the development of the American home to the high standard it has now reached. "Quality, convenience, comfort and beauty are all quite obvious in the new structures," he said, "but what are we going to do with the old homes after they become out of date and commence to run downhill? Are we simply going to see the old places carelessly thrust behind and continue their downward way until rot or shame necessitates their removal? Looking at it another way, can we afford it?"

It was pointed out that in a young country where land is cheap it is expedient for the farmer to do this, but the city-dweller—No! He can't do it unless he has

Tested and Approved 2706 Good Housekeeping Institute Member of Good Housekeeping Magazine



The EBCO
DISHWASHING SINK
with dish pan Built-in!

Builders of Homes and Apartments announce and feature the "EBCO" Sink — it is distinctively different and demanded by buyers who appreciate quality.

The EBCO Sink Is a Real Money Maker

The built-in dishpan is a never-failing sales clincher—the instant its many advantages are pointed out, another EBCO Sink sale is made. White or standard colors; right or left dish pan; with or without adjustable legs; corner and flat rim models—all the standard sizes to suit large or small kitchens can be supplied at prices which permit of a satisfactory profit to you. Let us send you literature and prices—there's no obligation. Write us today, mentioning your jobber's name.

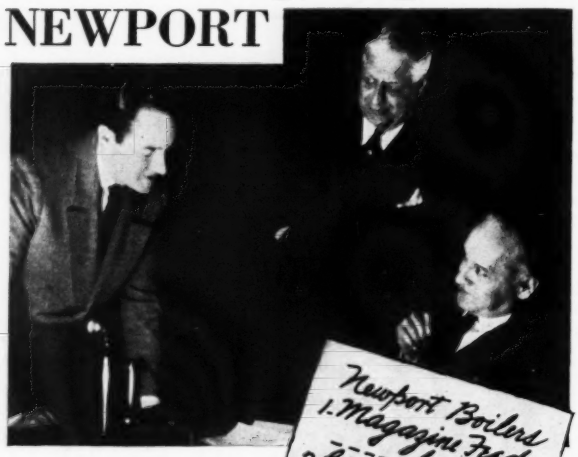
See Our Catalog Pages in the Domestic Engineering Catalog

WRITE FOR COPY OF OUR GENERAL CATALOG

The
D. A. Ebinger Sanitary Mfg. Co.
411 West Town St. Columbus, Ohio

Manufacturers also of Ventilated Closets, Urinals, Round Wash Sinks, Steel Partitions for Toilet Rooms, Drinking Fountains

"Jones" *will sell your* prospect a NEWPORT



Newport Boilers
1. Magazine Feed
— less care
2. Gives uniform heat
3. Burns cheaper fuel
— saves $5 per ton
4. Adaptable to wide range of fuels
Coal, Coke, Oil or Gas

. . . "my friend Jones *sold me* the Newport Magazine-feed Boiler. *And he knew his heaters, too.* Now I'm paying *half* what my neighbors pay for coal."

This is a typical expression from an average Newport owner. The economical, convenient heating which inspires such praise is endorsed by practical architects and veteran heating men in every building center.

Dependable magazine fuel feeding—savings up to $7 per ton on fuels — adaptability — even and plentiful heating—these are some of the major Newport features which make Newport Boilers easily "sell-able" as the most convenient, most modern and cheapest method of heating.

All Newport has had to do to help you get the cream of the business has been to broadcast the *facts* of Newport heating. Now is the time for you take the path of slightest sales resistance. Get behind Newport and get the worth-while profits!

Send for our Merchandising Program. There's food for thought and growth between its pages. Write for it today.

NEWPORT BOILER COMPANY
529 S. Franklin St., Chicago

THIS diagram shows the unique magazine-feed principle of the Newport Boiler. You fill the magazine never more than once a day . . . usually two or three times a week, as the weather requires. As the fuel burns away at the bottom gravity feeds more coal from above. An even fire-bed is maintained.

Successful heating for 15 years. Thousands of satisfactory installations have proven the soundness of Newport-magazine feed-heating.

NEWPORT
MAGAZINE FEED
BOILERS

NEWPORT BOILER CO.,
529 S. Franklin St., Chicago
I'm interested in your 1929 selling plan.
NAME.....
ADDRESS.....
CITY.....

A size for every need, Bungalows, Homes, Apartments and other Buildings. Steam, Vapor or Hot Water systems.

DISTRIBUTORS IN ALL PRINCIPAL CITIES—U. S. AND CANADA

unlimited means; yet there is a decided trend in this direction since the World War. During the past decade housing standards have taken a phenomenal rise. People desiring ultra-modern homes move farther out and build or buy new houses.

This means old houses are left vacant, or rented or sold to lower class tenants. Home owners left stranded by inability to finance a new home are obliged to live in a neighborhood that is doomed to deteriorate. In time, these buildings depress property values in the entire community.

Indicating that there are over 50,000 examples of this kind in the East Bay district, Mr. Cox then launched into his argument in favor of the home modernizing idea, pointing out the benefits, both direct and indirect, to be reaped by the plumbing and heating contractor.

The speaker cited the case of an enterprising plumber who makes a direct appeal to the housewife to bring her home equipment up to date.

Frank E. Cox

"The two most particular points which the average housewife is concerned with are her bathroom and her kitchen. This merchandising plumber addresses his efforts in this dirction, specializing on the rejuvenation of the two most important rooms in the house. He not only finds this work highly profitable in itself, but it furnishes many leads to valuable new business. And still that is not all; he finds this work to be an ideal stabilizer of trade volume.

"As a class, you plumbing and heating men are the most fortunate mortals in today's business world. Every day you are called into some home where you have never been before. That gives you a wonderful chance to see what items of equipment need replacing, or maybe you can sell them something they have never had before. Even if you're in the place only ten minutes, on some emergency repair work, it gives you an opportunity to contact the home-owner in an intelligent manner, because you've been in his house and know his needs."

Mr. Cox concluded his remarks by stating in support of his arguments favoring home modernizing that three years ago only two per cent of his company's volume represented this class of work. "Today, one-third of our business is the result of our efforts to bring homes up to date."

Before introducing the next speaker, Chairman Stoddard quoted an instance of a $46,000 job of modernizing an apartment building. Of the total sum expended, $32,000 went to the plumber. "This shows how vitally the plumber should be interested in the development of this class of work," he said, stressing the necessity for the plumber to meet the opportunity and capitalize on it.

W. Herbert Graham, plumbing and heating contractor of Oakland, has been for many years a keen observer of business conditions in his city, with particular reference to the industry in which he is engaged. His remarks

at the Bay Counties Conference were unusually pertinent.

"I am not a pessimist, but in my opinion the building industry will require fully two years to swing back to its accustomed stride," said Mr. Graham, adding that overbuilding was plainly the reason for the present slack. "In this district there are 50,000 dwellings in need of overhauling. You may use your own multiplier and figure it out for yourselves as to just how much this means in potential business."

Mr. Graham's belief in the possibilities lying in the direction of home modernizing are based on very real experiences. One had to do with a $15 job of tearing out and replacing a corner lavatory. "In this instance, as in many others, the home owner wasn't content until he brought up his entire bathroom and kitchen equipment to the pace set by the new lavatory. When the whole job was finished it cost $1,200."

Concluding his talk, Mr. Graham said: "When you once start work of this kind, it is surprising how the idea spreads. It is a sound idea, too, from every angle, for not only is the owner's investment protected for the time being, but property values are correspondingly increased for years to come."

Alexander Coleman, past secretary of the National Association of Master Plumbers, gave a short talk on conditions in the building industry, stating that he did not believe there is a city in the country today where building is at a normal stage. Mr. Coleman expressed his conviction that the modernization of old dwellings will go far toward equalizing the level of business not only for the master plumber but others engaged in construction work. "When all classes of labor are employed the added flow of wealth tends to benefit general conditions, and this, in turn, reacts to the good of all," he concluded.

V. A. Edgeworth, business manager of the Alameda County association, pointed out the real need for coordinating the effort directed toward influencing the owners of obsolete homes to take steps to bring them up to the modern standard.

Mr. Edgeworth also held the close attention of all by disclosing the plans now under way for holding classes in merchandising and business administration. These classes will be in charge of competent men designated by the vocational department of the Oakland public school department. Classes will be held regularly, at night, in the auditorium of Merchant Plumbers' Hall, 538 Twenty-fourth street. The Alameda County association deserves credit for this aggresive step, which is said to be the first of its kind in the country.

Among those who gave short, informal talks were: Fred High of Fresno, president of the California state association; William J. Monihan, president of the San Francisco association; J. V. Young, president of the Plumbing and Heating club, and vice president of the San Francisco association; Hal Sales of the West Coast branch of the Plumbing and Heating Industries Bureau; William Serpa, president of the San Jose association; J. V. Morse of Oakland, secretary of the Alameda County association; Charles A. Merritt of San Jose; H. P. Hanson of Palo Alto, and others.

The next Bay Counties Conference will convene in Oakland on September 30.

KING

The Economy Tank Heater

Here, at last is a laundry tank heater that will give your customers an abundance of hot water at fuel cost so low that it is practically negligible. Hot water for the laundry and general household use, too. Ask us about the complete line of King Heaters.

Write today.

OAKLAND FOUNDRY COMPANY
Belleville Illinois

At Prices that are Fair

Enterprise Brass Goods prices allow you a fair profit and assure you many sales.

Enterprise Brass Goods have the additional advantages of modern design, mechanical perfection and good appearance.

From your jobber

ENTERPRISE BRASS WORKS
Muskegon Michigan

EBW

Woman's Page

September signalizes the coming of fall and the reopening of schools in nearly every community. Auxiliaries which are resuming meetings at this season will find appropriate topics for study in the subjects suggested for September in the program prepared by the opportunity committee of the auxiliary, Mrs. E. D. Hornbrook, past national president, and the Plumbing and Heating Industries Bureau. The general subject is "Sanitation and Cleanliness in the Public Schools." Under this heading are grouped the following sub-topics: "Are the public schools in our city adequately equipped with sanitary fixtures? Cleanliness in toilets; hand-washing facilities; recent tendency toward showers in schools; special toilet and lavatory equipment for nursery schools and kindergartens; what literature on sanitation is to be found in our schools and what should be placed there." By giving these subjects their attention, the women of the auxiliaries will be able to aid in the attainment of better sanitation in the public schools.

Maine Auxiliary Celebrates Anniversary

The Women's Auxiliary of the State of Maine held a delightful picnic at Rice's Refreshment Grounds at Brunswick on the Orr's Island Road, with an attendance of nearly 120 from all parts of the State. The fifth anniversary of the auxiliary was celebrated on this occasion by a good old-fashioned family gathering. Some of those present enjoyed boating and bathing, but most preferred to rest and enjoy the good-fellowship, the scenery and the ideal weather. Everyone brought a picnic lunch, and the main attraction was the serving of piping hot steamed clams and lobsters, which were delicious. Mrs. Leon C. Blaisdell of Gardiner, president of the auxiliary, received much praise for the great success of the affair. Guests were present from all parts of the state, and all expressed their enjoyment.

A Message to Auxiliary Members

By Mrs. W. A. McAndrew, New President of the Women's Auxiliary to the National Association:

My first introduction into organization work was as far back as 1908 when Mr. McAndrew was elected to the presidency of the Florida State Master Plumbers' Association. On through the years this interest has grown with the organization, but it was not until 1925 that an opportunity presented itself where this enthusiasm could be applied where it would be of benefit.

In January, 1925, I was instrumental in organizing an auxiliary to the Master Plumbers' Association of Tampa, Fla., my home city, which was the first auxiliary in our state. We immediately applied for admission to the Mother National and became affiliated with the National, a fact of which we are very proud.

In the summer of 1925, through the efforts of Henry Longley, then vice president of the National Association of Master Plumbers, and the writer, the Florida Division of the National Women's Auxiliary was organized, the writer serving the first year as first vice president.

In 1926 my State complimented me by electing me to the presidency of our Florida Division. It was during this year that the National Auxiliary, through Mrs. Hornbrook, National President, asked me to serve on the National Board of Directors.

In 1927, at the National convention in Minneapolis, I was elected third vice president. Again in 1928 the National Auxiliary honored me at Memphis, where I was elected to serve as second vice president. In Buffalo, at the recent convention, the crowning event of my auxiliary career came when I was elected to the highest office within the ranks of our National Auxiliary, that of National President.

It would be difficult to express in words the gratitude I feel that the members of the National Auxiliary have seen fit to honor me in this manner. It will be my chief endeavor to carry on the work of the National office in a businesslike manner and I shall hope to have the co-operation of our entire national family.

Women's Auxiliary of Jersey City Holds Outing

The Women's Auxiliary of Jersey City, N. J., held an outing at the summer home of the president, Mrs. Louis Komoski, at Lincoln Park, N. J. About thirty members of the auxiliary and the master plumbers' association journeyed by auto to Lincoln Park, where a most delightful day was spent swimming and canoeing. A bountiful lunch was served, and nothing was left undone that would contribute to the comfort and enjoyment of the guests. Mrs. L. Komoski was a most charming and attentive hostess. Early in September a bus ride and picnic are planned.

Top row: Members of the Kalamazoo Women's Auxiliary. Left to right: Mrs. J. C. Wall, Mrs. W. J. Farrell, Mrs. W. A. Johnson, president; Mrs. Leo Muryne, secretary; Mrs. L. A. Schoolmaster, treasurer. Bottom: Grandstand view during the ball game between plumbers and salesmen at the outing of the Kalamazoo Association

Cleveland Auxiliary Holds Meeting

The Women's Auxiliary of Cleveland, Ohio, held an interesting meeting in August, at which, in spite of the warm weather, more than fifty per cent of the members were present. Mrs. A. Keller and Mrs. A. Heiss were hostesses, and served a delightful luncheon. Cards were played, Mrs. Marshall Patmos and Mrs. Fred Miller winning honors.

Tampa Auxiliary Greets Mrs. McAndrew

The Women's Auxiliary to the Master Plumbers' Association of Tampa, Fla., held its regular monthly meeting on Monday evening, August 5, at the club house of the Tampa master plumbers. Many of the members being away for the summer, a small but congenial group was on hand to greet Mrs. W. E. McAndrew, who had just returned from her trip north, and to the national convention, where she was elected president of the Women's Auxiliary to the National Association of Master Plumbers. Mrs. Frank Williams of Tampa was elected to the office of corresponding secretary, at the national convention. The Tampa auxiliary feels honored indeed that two of its members are now officers of the national auxiliary. Mrs. McAndrew gave a splendid report of the national convention, which was greatly enjoyed by all present at the meeting. Mrs. L. McGhan of Miami was a guest of the evening. After the meeting, the members of the master plumbers' association joined the ladies and iced melon was served by the hostess, Mrs. Frank Williams.

Improved "Wilhelmi" Boilers

Improved "Wilhelmi" Copper Range Boilers are able to withstand great strains because of their construction. They are reinforced top and bottom by special process of construction.

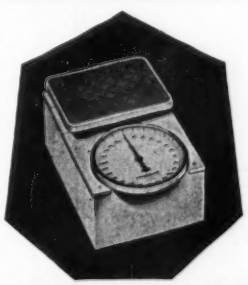
Write us for complete details.

HAYES MFG. CO., *Makers*
Paterson, New Jersey

GENUINE NASON STEAM TRAPS
UPKEEP
KEEP DOWN

NASON
NASON MANUFACTURING CO.
71-FULTON ST. NEW YORK N.Y.
Steam Specialty Specialists Since 1841

In colors to harmonize
with modern bath rooms

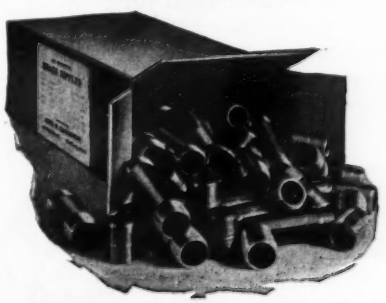


HANSON
WEIGH MASTER
BATH ROOM SCALES

You always make more money on Hanson Scales. Send for literature.

HANSON SCALE COMPANY, 546 N. Ada St. Chicago

BRASS NIPPLES



It is no longer necessary for you to buy your brass pipe nipples, piecemeal. Ballantine Brass Nipples come in convenient labor saving cartons in practical assortments.

Ask your jobber for them by name. He can supply you.

B. D. BALLANTINE, 10 Main St., Fitchburg, Mass.

Wherever Important Buildings Go Up...SARCO TRAPS *Go In!!*

Years ago, when we first started making Sarco Radiator Traps and Packless Inlet Valves, we had to tackle every engineer on every new building and prove with engineering facts that the Sarco were superior to any other make.

Today it's different. For thousands upon thousands of these traps and valves have been installed and are proving their own case in actual operation. Today most engineers and architects known Sarco features.

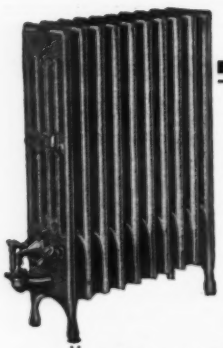
They know that Sarco Radiator Traps are usually long lived due to the helical expansion element; that they have a perfectly free discharge at all times; that they are noiseless, won't freeze, air-bind or water-hammer.

They know, too, that the Sarco Inlet Valve is a *true packless* supply valve, without any packing; that it operates by a three-quarter turn of the handle and that the pressure is always even, smooth and regular.

Yes, most well informed engineers know these features, and so today, wherever important buildings go up, the chances are that Sarco Traps and Valves go in. Write for booklets M-110 and M-155.

SARCO COMPANY, Inc.
183 Madison Ave. . . . . New York, N. Y.
Branches in principal Cities

SARCO Radiator Traps and Inlet Valves



For Every Heating Need

As an auxiliary heater for bathroom or kitchen, nursery or workroom, the Automatic Gas-Steam Radiator cannot be surpassed.

It provides steam heat without a boiler and is ideal for summer home and all other installations.

Reasonable in first cost and operating cost. Write for particulars on this added profit radiator.

AUTOMATIC GAS-STEAM RADIATOR CO.
PITTSBURGH .·. PENNSYLVANIA

A.G.A. LABORATORY "APPROVED"

New Business Ventures

Chicago, Ill.—Bel-Harlem Plumbing Co., 7144½ Belmont avenue, has been incorporated with a capital of $10,000. The incorporators are Maurice Kane, J. B. Greenberg and Irving Hollobow.

San Francisco, Calif.—John L. Singewald has opened a plumbing and heating shop at 1635 California street.

Waukon, Ia.—A. A. Keefe has recently engaged in the plumbing business in this city.

Montclair, N. J.—The Better Plumbing Co. has been organized and incorporated with a capital of $125,000. Plans are under way to open a modern plumbing contracting and engineering business in this city.

New York, N. Y.—Brady Heating, Inc., has been organized in the Bronx with a capital of $10,000, to conduct

Top row: Mrs. J. D. Miller and J. D. Miller of W. G. Shafer Co., Inc., George Smith of The Hunting Co., F. R. Dunkerton of Pierce, Butler & Pierce Mfg. Corp. Middle row: Mr. and Mrs. J. B. Goldie, Mrs. and Mr. J. J. McCormack and Jack McCormack. Bottom row: Robert Pearson, C. J. Straub, Herman J. Gaebler, James Dalton and William O'Connor (front). Photos taken at the outing of the Syracuse Master Plumbers' Association

a general plumbing and heating contracting and engineering business. The new firm is represented by F. J. Guinon, 3573 DeKalb avenue, the Bronx.

New York, N. Y.—The Jennings Plumbing & Heating Corp. has been organized and incorporated in the Bronx, with a capital of $20,000, by A. M. Jennings and associates. It is planned to establish and operate a plumbing and heating contracting and engineering business. The new concern is represented by Rubenstein and Rosling, 50 Court street, Brooklyn.

New York, N. Y.—The Kearns Engineering Co. has been

organized and incorporated with a capital of $5,000, to establish and operate a plumbing engineering business in the Bronx. The company is represented by S. F. Reynolds, 560 Melrose avenue, the Bronx.

New York, N. Y.—The System Plumbing Co. has been organized and incorporated with a capital of $2,000, to establish and operate a plumbing contracting and engineering business. H. Kopperman, 144 Rivington street, represents the concern.

Business Changes

Philadelphia, Pa.—M. Sheffler and Samuel Gross of the Sheffler-Gross Co., Inc., of this city have purchased a substantial interest in the newly organized Delaware County Heating Co., which will operate the plant formerly owned by the Springfield Heat Co. at Springfield, Delaware county, Pa.

Marshalltown, Iowa.—E. F. Mack, proprietor of the Mack Plumbing Co., 11 South Eighth avenue, has purchased the McCarten Plumbing Co.'s business and equipment at 108 West Main street. The two concerns will be merged into one plumbing establishment with headquarters in the building occupied by the McCarten concern. The McCarten Plumbing Co. was organized, and operated by the late Frank T. McCarten until his death a few weeks ago.

Bloomfield, Ia.—The Bloomfield Plumbing and Heating Co. has been sold by its owners, John and Roy Sayres, to Earl Mucha of Keosauqua, Ia. Mr. Mucha was formerly engaged in the plumbing business in the latter city.

Wisconsin Rapids, Wis.—Lewis Eron, proprietor of the Eron Plumbing Co., has purchased from the Joseph Cohen estate, the building known as the Empire building, running from First street north through to Second street north. Mr. Eron plans to use the first floor of the building for a showroom, workshop, office and warehouse, and expects to be moved into the new quarters by September 10. The company at present is in the Mead-Witter building.

Atlanta, Ga.—W. B. McGrath has sold his interest in the McGrath Plumbing Co. and has purchased stock in the Atlanta Plumbing and Heating Co., 205 Whitehall street, S. W.

Howard, S. Dak.—F. J. Licht has sold his building in this city and is planning the erection of a new building to house his plumbing business.

Top row: Johnstown, Pa., delegation attending. Bottom row: D. J. Kennedy and Judd Billups, Jeannette, Pa.; Wm. Burheim; Fred Ketterer, A. E. Sloan, and S. M. Feight. Photos taken at Westmoreland County, Pa., master plumbers' outing

EMERGENCY TUBE PLUG

When you install this Emergency Tube Plug you know the job is done right. No need to worry about its breaking and due to the tapered threads it cannot work loose.

Ask Your Jobber

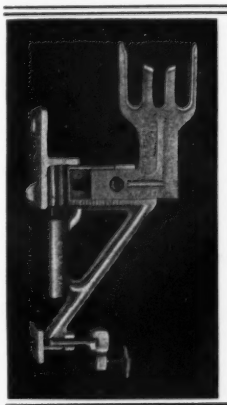
JOHNSON-WASHBURN COMPANY
91 Haverhill Street - - Boston, Mass.

"AMERICAN SEAL" Pipe Joint Cement

Dry and Plastic Gray and Graphite

How many times have you had trouble getting pipe joints apart simply because an inferior cement was used. "American Seal" is not affected by heat or cold and will make joints leakless.

THE WILLIAM CONNORS PAINT MFG. CO.
Troy . . . . New York



Yes, TU-BU-LUR RADIATOR BRACKETS Hang All Types

One style (in three sizes) of this completely adjustable bracket hangs all types of tube radiators. Installations are made so quickly and easily that labor costs are kept at a minimum, and better work is accomplished.

Distributed by the United States Radiator Corporation. For sale by all leading jobbers.

LITTLE GIANT MFG. CO.
1917 Nicollet Ave.
MINNEAPOLIS MINNESOTA

ACID-PROOF CEMENT

Wherever it is necessary to do acid-proof masonry around such places as Acid-Sumps, Catch Basins or Acid Tanks, "U. S. Standard" Acid - Proof Cement, will do the job.
Furnished in 100-lb. bags.

Write for details of our complete line of acid-proof Sinks, Piping and Traps

The U. S. Stoneware Company, 46 Church St., N. Y. C.

FAMOUS USERS OF
KEWANEE
HIGH PRESSURE
WATER SYSTEMS

MR. DE FOREST HULBURD

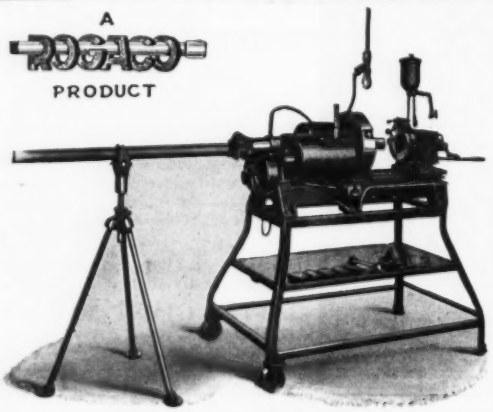
At Lake Forest, Illinois, on the estate of Mr. De Forest Hulburd, President of the Elgin National Watch Company, a Kewanee System furnishes an unfailing supply of water under strong pressure at all times.

There is a Kewanee *High Pressure* System for water supply, electric light and sewage disposal for every need. There are over *200 models* suitable for every installation from the most modest bungalow to the largest estate. Also a full line of Centrifugal Pumps and Deep Well Turbines from the small $69.50 outfit to those which fit wells from 12 in. to 36 in. in diameter.

Kewanee will show you how to save dollars and troubles. Write for data.

KEWANEE PRIVATE UTILITIES COMPANY
417 So. Franklin St. KEWANEE, ILL.
DEALER CORRESPONDENCE INVITED

A ROGACO PRODUCT



More Work--More Money

If you own a Rogaco Portable Electric Pipe Machine you can do more work with the same force of men you now have, or the same amount of work and employ fewer men.

The Rogaco saves labor, saves time, and increases profits. Why not install one now and make more money than you ever have?

Write for full information and list of users of this practical, portable, money maker

MANUFACTURED BY
ROBBINS, GAMWELL & COMPANY
Pittsfield, Massachusetts

New Trade Literature

A New Catalog of Drills

The Aurora Tool Works Division of the Oesterlein Machine Co., Cincinnati, Ohio, has just issued a new catalog of its drills. This catalog consists of 14 pages, 8½x11 inches, and contains careful illustrations with detailed descriptions of the company's drills.

Scovill Mfg. Co.'s Catalog

The Scovill Manufacturing Company, Waterville, Conn., has issued a catalog descriptive of its sanitary plumbing equipment for bathrooms. Numerous line drawings and photographic reproductions illustrate the text. The different classes of equipment, such as showers, bath fixtures and flush valves, are arranged in logical order, concisely described, and, in most cases, illustrated. To provide against errors, code letters and specifications to be used in ordering are given. The catalog consists of 91 pages, 8x10½ inches in size.

"This Way to Profits"

A booklet of much interest to plumbing and heating contractors has just been published by the Heating and Plumbing Finance Corp. of New York City. The title of the booklet is "This Way to Profits." It outlines in a simple manner the profit possibilities to contractors in selling to the public on convenient payment terms. It also explains why this method of selling should be actively promoted, and calls attention to the means of developing such business, listing twenty-two different ways. Illustrations and instructions, showing how time payment sales and papers are handled, are given in the booklet.

"Simplified Plumbing Goods"

"Simplified Plumbing Goods" is the title of a new catalog which has just been issued by the I-X-L Pump & Mfg. Co. of Philadelphia, Pa. This catalog is printed on highly glazed paper and contains 184 pages. It illustrates and also describes in detail the company's products, including air compressors, air cushions, air regulators, ball cocks, automatic closets, frost-proof closets, flush valve closets, seat action closets, drainboards, sinks, traps, seat hinges, seat bumper holders, urinal combinations, water regulators, etc. The catalog is illustrated with high grade outline half-tone engravings of the company's fixtures and with fine zinc etchings showing roughing-in measurements of the various fixtures. Its value for ready reference is enhanced by a very complete index.

Bryant Heater & Mfg. Co.'s Handbooks

Bryant Heater & Mfg. Co., of Cleveland, Ohio, has published a handbook on heating water with its gas boilers. The handbook contains detailed descriptions of the company's gas boilers and controls, as well as technical information of value to the architect and heating engineer. How to select the appropriate boiler, to calculate boiler and storage tank capacities, and to determine hot water consumption, etc., is explained in the handbook. "Hand Book on Heating Buildings" is the title of another publication just issued by this company. An interesting feature is a series of colored, full-page illustrations showing how the basement boiler room may be furnished for a movie projection room, a play room, a den, or a kitchen. This handbook contains sixteen pages and cover, is 8½ by 11 inches, and bears the A. I. A. file number 29f4.

Catalog of Abingdon Sanitary Mfg. Co.

Catalog E has just been issued by Abingdon Sanitary Mfg. Co., of Abingdon, Ill. This catalog consists of 160 pages, 8½ by 10½ inches, bound in a handsomely em-

bossed leatherette cover. "The Story of Making Vitreous China" is told in the first pages, and the many processes of molding, dipping, cleaning, inspecting, etc., are illustrated. A section is devoted to lavatories, and numerous illustrations show the various styles manufactured by the company. Roughing-in dimensions are also given. Another section comprises drinking fountains. One hundred pages are devoted to descriptions, diagrams, roughing-in measurements and illustrations of water closets.

Review of the Book
"Trade Associations: The Legal Aspects,"
by Benjamin S. Kirsh, published by the Central Book Company of New York

This book is an attempt to summarize in a practical way the situation prevailing at present in connection with trade association activities in the light of various court decisions and the expressions of government officials in the departments having a bearing upon the subject of association work.

Quoting from President Hoover, the author sets forth the general viewpoint at the present time:

"One of our constant national problems is how to obtain these benevolent results of such co-operation without creating dominations of groups that would stifle the quality of opportunity."

At another time, Mr. Hoover said:

"The whole movement toward co-operative action arises from a fundamental need to which we must give heed. Where the objectives of co-operation are to eliminate wasteful production and distribution, to increase education as to methods of business, to expand research in processes of production, to take collective action in policing business ethics, to maintain standards of equality, to secure adequate representation of problems before the government and other economic groups and to improve conditions of labor, to negotiate collectively with highly organized groups of labor, to prevent unemployment, to supply information equally to the members and to the public, upon which better judgment may be formulated in the conduct of business; there these activities are working in the public interest."

As the author points out, the result is a more liberal and sympathetic attitude toward trade association activities since the decisions of the Supreme Court in the maple flooring and cement cases in 1925. The result of this changed attitude has been that instead of a searching for a technical violation of the anti-trust laws, the court looks rather for the presence of essential economies and benefits. The result of the decisions in the maple flooring and cement cases was that the fact that unlawful agreements might be rendered easy of accomplishment because of statistical plans, standardization, and the uniformity of trade practices and that these practices have resulted in uniformity of price levels, was not sufficient to render the use of these instrumentalities unlawful. It is now the burden of the complaining parties to establish proofs that activities of such associations are in fact contrary to the anti-trust laws, it being no longer sufficient merely to show that trade association activities might tend in that direction.

Having indicated the changed trend of judicial thought, brought about by various economic changes, Mr. Kirsh proceeds to consider the legal bearings of uniform cost accounting methods, credit bureau functions, patent interchange, foreign trade functions, uniform basing point systems, collective purchasing functions, standardization, trade relations and restricting channels of distributions, studying court decisions and documents.

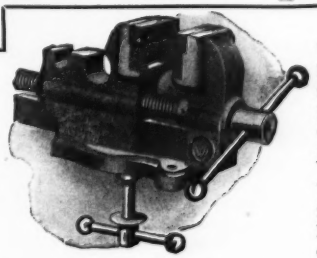
VANDERMAN Steel Tool Chest and Combination Bench Pipe Vises

Style "A" One Till

Vanderman Steel Tool Chests are made in many convenient sizes or can be made up to order.

They have reinforced malleable corners and selected hardwood braces.

Write for Catalog



No. 1 Vise

This vise will handle all work from 1/8 to 10 in. It is equipped with removable jaws.

We also manufacture Pipe Benders and Cutters.

THE VANDERMAN MANUFACTURING CO. WILLIMANTIC, CONN.

NATIONAL RADIATOR CORPORATION
***Executive Offices:* 55 West 42nd Street, New York, N.Y.**
National *Made-to-Measure* Heating Systems
National Bonded Boilers National Aero Radiators
Copyright 1929, National Radiator Corp.

YOU WOULD not think of missing your daily paper, yet it does not begin to help you as your business paper does, so why not spend a minute to send in your subscription? You will soon realize the tremendous help you have been doing without.
Domestic Engineering, 1900 Prairie Ave., Chicago

KNIGHT-WARE
"IT IS THE BODY ITSELF"

Holding "Old Man" Corrosion in Newspaper, Rotogravure and Photographic Plants.

It doesn't take long for "Old Man" Corrosion running in the wastes from such establishments to get busy. In these cases he is generally in the form of iron perchloride and silver solutions and to say that he works diligently is putting it mildly. In fact he is so active that very few materials are available that will even hold him in check and only *one* against which his efforts are totally futile.

KNIGHT-WARE Acid Proof Chemical Stoneware is absolutely proof against the above corrosives and will withstand the action of all acids (hydrofluoric acid excepted), alkalies, chemicals and corrosive solutions and gases, weak or strong, hot or cold.

KNIGHT-WARE Pipe and Fittings once installed for service give a permanent and satisfactory installation and one that will last the life of the building without replacement. *Your first cost is your last cost.*

Besides Sinks and Pipe and Fittings, we are also in a position to manufacture and supply all kinds and designs of Photographic and X-Ray Tanks, Silver Baths, Etching Tubs and any special types of Acid Proof Tanks and Containers, that might be needed.

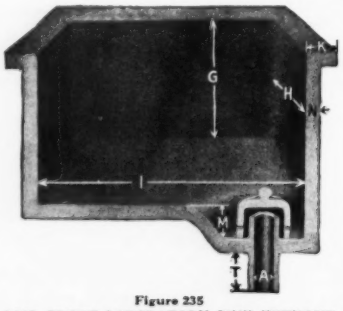


Figure 235
ACID PROOF LABORATORY SINK WITHOUT BACK, SHOWING LUTE TRAP

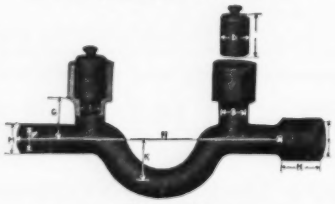


Figure 267-A
ACID PROOF RUNNING TRAP WITH CLEANOUTS AND PLUGS

We shall be glad to be of service

MAURICE A. KNIGHT
OFFICE AND PLANT
AKRON, OHIO

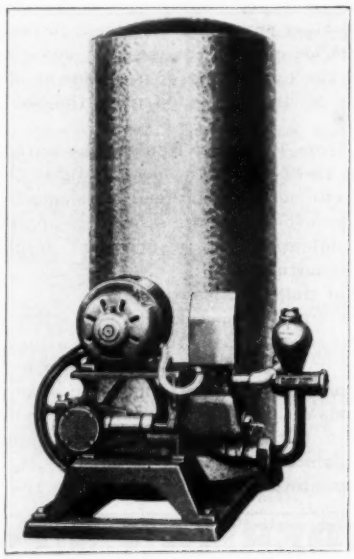
OFFICES:

New York City, 804 World Building
San Francisco, Merchants Exchange Building
Philadelphia, 1600 Arch Street
Toronto, Ont., 608 Temple Building
Detroit, 10-233 General Motors Bldg.
Montreal, Que., 1307 Notre Dame St. West

New Equipment

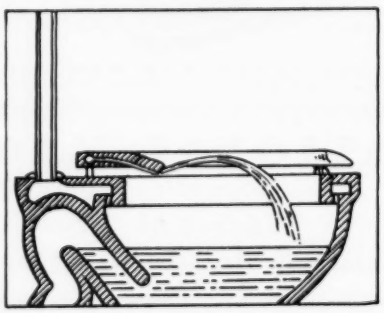
Shallow-Well Water System

A line of shallow-well pumps and water systems has been announced which are designed to embody the features of convertibility, elimination of water logging and air binding of tanks by means of an automatic arrangement, and horizontal and vertical adjustment of the motor in taking up belt slack. In the matter of convertibility, the 250 gallons per hour pump may be changed to one with a capacity of 300 gallons per hour by changing the motor and pulley to the prescribed size. In other words, in variations of capacity between 250 gallons per hour and 300 gallons per hour the pump used is the same but the motor size determines the output. The same convertibility applies to the pumps having capacities of 500 gallons per hour and 600 gallons per hour. The manufacturer is the Duro Co. of Dayton, Ohio.



A Development in Toilet Fixtures

The bidet feature has been applied to the standard closet by means of a development in toilet seats. This seat is of the conventional design with the addition of a water jet or tube centered in the seat hinge post. A hand valve at the side of the bowl operates the stream of water coming out of the jet. The design is such as to make the feature unnoticeable upon casual observation, inasmuch as only the end tube is visible from above. The manufacturer of this product is the Eljer Company, Ford City, Pa.



Pipelines Connected by LYT

IF

—All the telegraph boys in the world on bicycles were set end to end, they'd be on the wrong side of the street.

—"Early to bed and early to rise" and all the rest of it is true, modern youth has found that it can't be proved by following the rule one night out of seven.

—It's true that all the world's a stage, men are terribly careless about their make-up.

IT'S THE LAW

A lawyer's dog one day stole a piece of meat from a butcher's counter. The butcher, knowing to whom the dog belonged, went to the owner that evening and put the following question to him:

"Sir, suppose a dog steals a piece of meat from my shop, have I a right to make the owner pay for it?"

"Certainly," replied the lawyer.

"Very well," said the butcher, "I'm sorry to tell you that it was your dog that stole my meat. It weighed three pounds. You therefore owe me a dollar and a half."

Without a word, the lawyer took out a dollar bill and a fifty-cent piece and gave them to the butcher. The next day the butcher received the following statement from the lawyer:

"Due, from A. B., the butcher, to Y. Z., the lawyer, $10 for legal advice."

JUST TO GET THE DAY STARTED RIGHT

To those of us who talk and talk,
This proverb should appeal:
The steam that blows a whistle
Will never turn a wheel.

Says the Editor of "Trade Winds," "When a man gets a motor car he comes to regard scenery as something more appreciated when scrambled. He cannot respond to a beautiful sunset without a desire to side-swipe it.

"All the scenery goes in one eye and out the other. He passes a meadow land so fast that grazing cows look like greyhounds in a whippet race. Farmers at their plows flash by like hockey players in a last period rally. Thirty-five vistas to a gallon is his slogan."

Also, he remarks, they cure Scotch people from stuttering by making them talk over the long-distance telephone.

TO RIGHT A WRONG

"Oh, dear! Oh, dear!" moaned the wife, "I wish I'd taken poor mother's advice and never married you."

"Did your mother try to stop you from marrying me?" the husband demanded, as he swung around quickly.

The wife nodded violently.

A look of deep remorse crossed the man's face. "Great Scott!" he cried. "How I wronged that woman!"

Mercoids.

RIDDLE

What is the difference between a flea and an elephant?

Answer: An elephant can have fleas, but a flea can't have elephants.

"SY" SEZ

She: What would you call a man who hid behind a woman's skirts?

He: A magician.

Noah was probably the first financier. He successfully floated a company while the rest of the world was in liquidation.

Lady: "Is this fresh milk?"

Milkman: "'Arf an hour ago, ma'am, it was grass."

"SY" MARTIN, Owensboro, Ky.

Paper profits have narrow margins. LYT.

Is your firepot

—as speedy

—as economical

—as sturdy

—as this one?

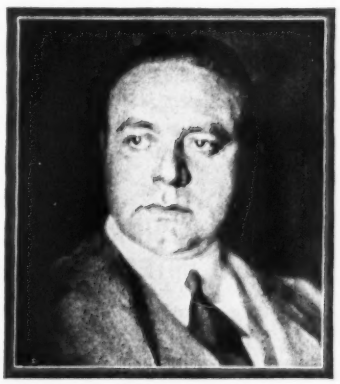
THE new Detroit No. 50 Firepot achieves perfect generation in less than a minute and a half—it burns kerosene or gasoline equally well and is equipped with a needle-type control valve that permits the flame to be turned very low. It has a practical red enamel finish and over a year of rigid testing in actual service has proved beyond a doubt its ability to stand the gaff.

Be sure to see a Detroit No. 50 the next time you visit your hardware dealer or supply house.

Bought Because They're Better

DETROIT
TORCHES & FIRE POTS
DETROIT TORCH & MFG. CO., DETROIT, MICH.

New York Office, B. S. Alder Co. - - 45 Warren St.
William P. Horn Co. - Rialto Bldg., San Francisco
C. F. Gallager - - - 223 Main St., Hartford, Conn.
O. C. Andersen - - 627 Washington Blvd., Chicago
Grant-Chater Co. - 415 Metropolitan Bldg., Toronto



MR. C. C. SCHIFFELER

Now General Manager of the Hotel Gibson, Cincinnati's largest and finest hotel, and Supervising Manager, Hotel Van Cleve, Dayton, Ohio.

Formerly of the Ritz-Carlton, New York

HOTEL GIBSON

1000 rooms **$3 and upward**

CINCINNATI

CAN YOU IMAGINE ?

A COMPANY,

unaided by advertising, forcing itself to a position of acknowledged leadership thru the sheer mechanical merit of its product?

A PRODUCT

so obviously possessing patented points of superiority that 50,000 satisfied users have assumed the responsibility of singing its praise to the world?

THE POSSIBILITIES

of such a company and such a product when backed by an aggressive sales and advertising program? ◆ Such has been the past history and is the present prospect of the Ray Burner Co., successor to the W. S. Ray Manufacturing Co., pioneer manufacturers of Ray Oil Burners for commercial, domestic and industrial use.

TO MEN OF VISION RESPONSIBILITY AND INTEGRITY

Ray Burner Co. offer the opportunity of dealership franchises in some choice territories. This opportunity is for immediate acceptance. We anticipate our sales organization will soon be complete.

For complete details write at once to the **Sales Manager**

RAY BURNER CO.

San Francisco, U. S. A.

Bath a Day Movement

The school season is with us again, offering opportunities for carrying on the educational work so necessary to every industry.

171

The number 171 at the left is the number of cities and towns in the United States in which "The Story of the Bath" has been distributed in the schools for use in classrooms. Inquiries are coming in steadily from teachers who are trying to plan their school work for the new year and who are anxious to have all the health material they can get.

THROUGH the years since the Bath a Day Movement was inaugurated by "Domestic Engineering," "The Story of the Bath" has proved a popular booklet with contractors who recognized the value it held for them as educational material and as a means for securing publicity.

Many have made arrangements with school authorities to distribute copies of the booklet to their schools. Some have conducted essay contests, based on the booklet. This is what the National Association did at Memphis last year when 4,000 students participated.

Other contractors have distributed copies of the booklet at meetings of the Rotary, Kiwanis, Lions and other such clubs. For this purpose, "Domestic Engineering" has a thirty-minute program which will be furnished to any plumbing contractor for presentation at his local club. No charge for the material—we suggest merely securing sufficient copies of "The Story of the Bath" for distribution to the members present so that the plumbing contractor's talk will be remembered.

If you have never read "The Story of the Bath" and if you want help in preparing a talk on sanitation, write us today.

Epigrams—For Your Use

A man is apt to be suspicious if his wife isn't jealous of him.

* * *

An egg in the hand is worth more than the hen in the bush.

* * *

Truth is stranger than fiction to the average married woman.

* * *

Every cloud has its silver lining. Even a jail has its outsider.

* * *

Never hit a man when he's down. Hit him when he's up a tree—then run.

* * *

A woman can talk without thinking, but she can't think without talking.

* * *

A woman is apt to envy a parrot if it can talk faster than she can.

* * *

There is no fool like an old fool who acts like a young fool.

* * *

The harder a man works the less time he has to whine.

* * *

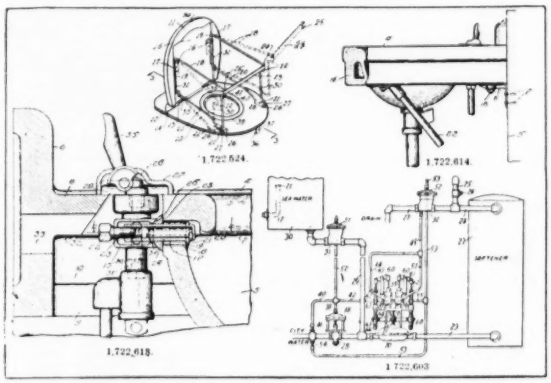
Never look a gift automobile in the carburetor.

PATENTS

Plumbing Department

1,722,524. Child's Toilet Seat. Fred C. Immele, Kansas City, Mo.

1,722,603. Method and Apparatus for Reconditioning the Water-Softening Material in a Softening Apparatus. Edward T. Turner, Dayton, Ohio.

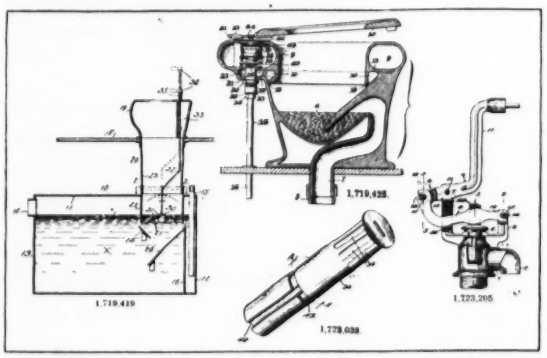


1,722,613. Lavatory Faucet Attachment. Earl G. Watrous, Chicago, Ill.

1,722,614. Lavatory Support. Earl G. Watrous, Chicago, Ill.

1,719,425. Water-Closet. Joseph De Rose, Philadelphia, Pa.

1,719,419. Septic Toilet Tank. Thomas Bennett, Perry, N. Y., assignor to Kaustine Company, Perry, N. Y.



1,723,038. Pop-up Valve. Herman M. Hoelscher, Chicago, Ill., assignor to Hoelscher Brothers, Chicago, Ill., a Corporation of Illinois.

1,723,205. Ball Cock. Walker Fairfield Peterson, Baltimore, Md., assignor to Baltimore Valve Corporation, Baltimore, Md.

1,724,680. Rosin-Core Solder. Perry C. Ripley, Chicago, Ill., assignor to Kester Solder Company, Chicago, Ill., a Corporation of Illinois. A self-fluxing solder comprised of a hollow solder member and a core of rosin-containing material in a substantially permanently plastic form completely filling said hollow member and sealing the interior thereof against the ingress of air and moisture.

1,723,239. Thermostat Apparatus for Water Heaters. Emil Howe, San Gabriel, Calif.

1,723,599. Automatic Self-Operating Flushing Valve. Albert Bullock, Los Angeles, Calif.

FOR ALL LEADWORK

Write "Dept. D" for Sample.

YAGER'S SOLDERING SALTS
have been used for years by the men who know and do good work.

ALEX R. BENSON COMPANY, Inc., Hudson, New York
For list of distributors see 1929 McRae Blue Book
Sales Agency for Canada: Canadian General Electric Co., Ltd.• Toronto and Montreal.

Telephone: Lawndale 1850-1851

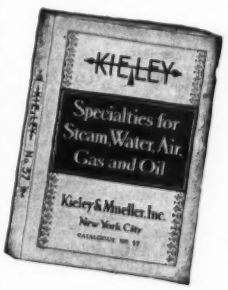
Ingot Brass

Smelters and Refiners

High Quality Metals

Metals made up to specifications.

R. LAVIN & SONS
2511-2525 W. 21st St.
John Hartman, Sales Mgr. **Chicago, Ill.**

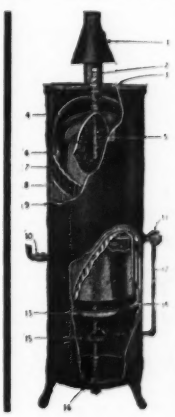


Send for free 226 page book

KIELEY
REGISTERED TRADE MARK

Write for it! —an interesting authority on Steam Specialties

Kieley & Mueller, Inc.
34 West 13th St.
New York City



The AMPCO Automatic Copper Storage System

Every one of the sixteen points of the AMPCO Automatic Copper Storage System is a money maker. An investigation will convince you.

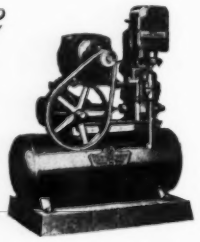
Write us about them.

ARTISAN METAL PRODUCTS CO.
CHARLESTOWN, MASS.

When You Get a DL Water System You've Got Something

Five big reasons

why DL Water Systems will increase your profits



IF you're interested in increasing your profits you'll investigate the DL franchise at once. For this is a DL year. Never before has the public been so definitely in favor of DL. Never has preference been clearer. And every indication points to an even greater popularity next year.

There are five good reasons for this growing DL popularity. The first is *value*—the kind of dollar for dollar value that General Motors puts in every product. The second is the *completeness* of the DL line. There's a DL model to fit every need of any country, suburban or city home. And the *prices* of all these models are so *low* that they meet all competition with an *extra* margin of built-in quality. Yet even on these rock-bottom prices the General Motors Acceptance Corporation offers such *easy terms* that anyone can afford to install a DL Water System. And DL offers so effective a *sales* and *service* organization that the *value* of a DL franchise is doubled by the speed of sales and the simplicity of service.

So don't wait too long. Now's the time to get in on this growing market for DL. DL dealers are having their business actually created for them. Why shouldn't you share this opportunity? Write us at once for full details of our selling plan. A post card will bring the facts. Send us one *today*.

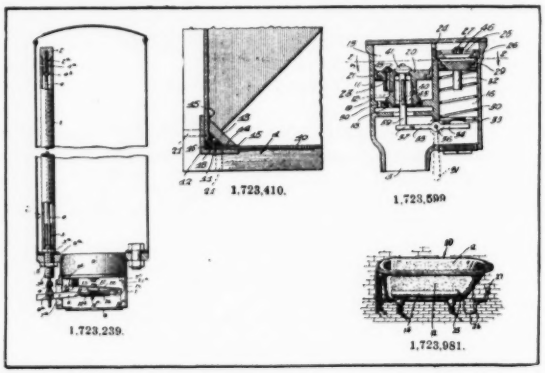
DELCO-LIGHT COMPANY
Subsidiary of General Motors Corporation
Dept. Q-130, Dayton, Ohio

Also Manufacturers of Delco-Light Electric Plants

DL ELECTRIC WATER SYSTEMS
Products of General Motors

"The GOLD STANDARD *of Quality"*

1,723,981. Combined Bathtub and Water Heater. John V. Garcia, Los Angeles, Calif.

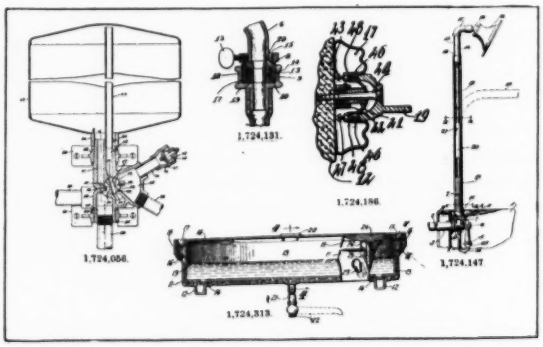


1,723,410. Shower Bath. Bostick Jack Dickert, Ariton, Ala.

1,724,131. Adapter for Smooth-Faced Faucets. George V. Gavaza, Quincy, Mass.

1,724,147. Shower Fixture. Corey L. Russell, Chicago, Ill.

1,724,186. Adjustable Shower Door. David Fox, Brooklyn, N. Y.

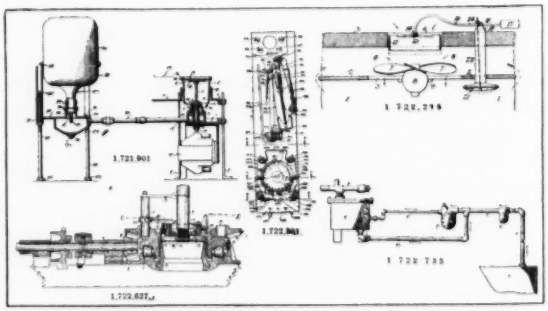


1,724,056. Water System. Clarence Warner, Dayton, Ohio, assignor to Delco-Light Company, Dayton, Ohio, a Corporation of Delaware.

1,724,313. Water Cooler. Morris Raymond, Brooklyn, N. Y.

Heating Department

1,721,901. Oil Burner. Edwin R. Evans and Carl M. Tichenor, Detroit, Mich.



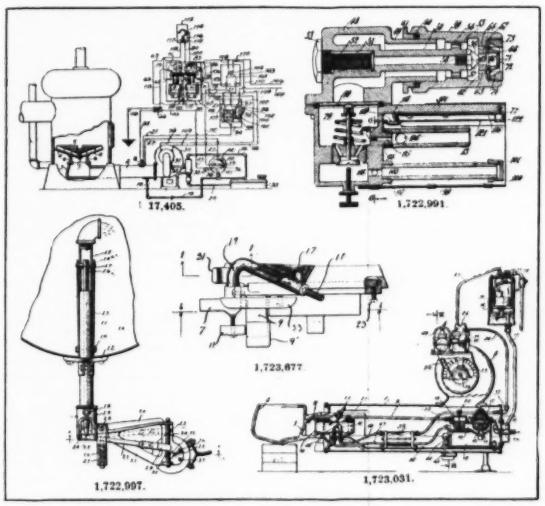
1,722,215. Ventilating Apparatus. William Finney Hillpot, Frenchtown, N. J.

1,722,361. Heat Regulator. Everett H. White, St. Paul, Minn.

1,722,627. Pipe Cutting and Threading Attachment for Rotaries. Harry R. Decker, Houston, Tex.

1,722,735. Liquid-Fuel-Burning Apparatus. Wendell E. Deland, Worcester, Mass.

17,405. Oil-Burning Heating System. Lewis L. Scott, St. Louis, Mo., assignor, by mesne assignments, to Electrol Incorporated, St. Louis, Mo.



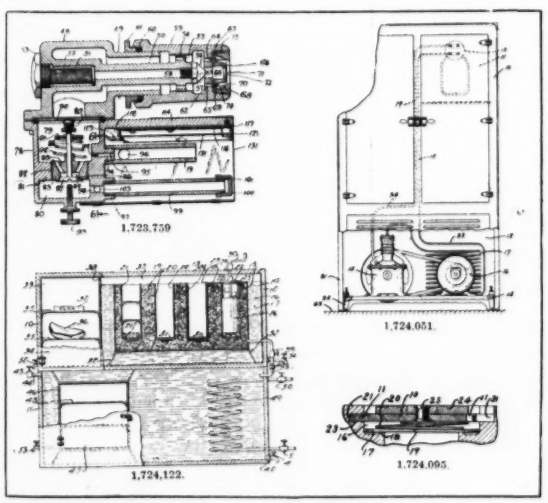
1,722,991. Oil Burner. Charles O. Bech, New Rochelle, N. Y.

1,722,997. Domestic Oil Burner. Loyd I. Aldrich, Peoria, Ill., assignor to Preferred Oil Burners, Inc., Peoria.

1,722,031. Oil-Burning Apparatus. John Good, Garden City, N. Y., assignor to Good Inventions Co., New York.

1,723,677. Oil Burner. Henry Joseph Cary, Saukville, Wis.

1,723,759. Oil Burner. Charles O. Bech, New Rochelle, N. Y.



1,724,051. Refrigerating Apparatus. Otto M. Summers, Dayton, Ohio, assignor, by mesne assignments, to Frigidaire Corporation, a Corporation of Delaware.

1,724,095. Refrigerating Apparatus. Bayard D. Kunkle and Otto M. Summers, Dayton, Ohio, assignors to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware.

1,724,122. Refrigerating Apparatus. Frank Berdolt, Coxsackie, N. Y., assignor of one-half to M. E. Berdolt, Albany, N. Y.

Bull's Eye HEAT
WATER HEATER

For Kerosene

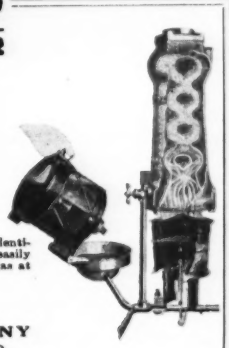
The "BULL'S ⊙ EYE" Kerosene Water Heater has the same principle as the "BULL'S ⊙ EYE" Gas Heater —eliminates pencil-like coils—has large free passageways—lasts from 4 to 6 times as long as old-style coil heaters.

The burner is a Giant Wick Burner—heating 50% faster than the standard single burner.

Except for burners, the two heaters are identically the same. The Kerosene heater can easily be converted for use with public service gas at a cost of a few dollars.

Price, $30.00 plus installation.

Order from your jobber



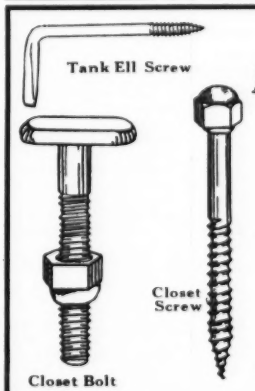
THE DUNHAM COMPANY
BEREA (*Suburb of Cleveland*) OHIO

GORTON
SINGLE PIPE
VAPOR HEATING SYSTEM

Write for our new catalog No. 94. It will tell you in detail how this advanced heating system operates. It will also tell you why there is more MONEY to be made the GORTON way. *Write Us Today.*

GORTON HEATING CORPORATION
Manufacturers - Established 1887
96 Liberty Street New York City

HINDLEY'S
Plumbers' Specialties



These specialties will save you time and trouble. They will make your job easier and longer lived.

Ask your jobber for Hindley Plumbers' Specialties.

HINDLEY MFG. COMPANY
Valley Falls, R. I.

DOMESTIC ENGINEERING's Retail Advertising Service makes advertising easy for you—all you do is clip the copy from your copy of the paper and hand it, with the cut we send you, to your newspaper. Only $4.20 for 12 illustration cuts. Clip this, attach your check for $4.20 and mail today.

DOMESTIC ENGINEERING
1900 PRAIRIE AVENUE, CHICAGO, ILLINOIS

CLASSIFIED

8 cents for each word including heading and address. Count seven words for keyed address. Minimum $2.00 for each insertion. One inch $4.00.

Situations Open

Wanted—Distributors and specialty salesmen for Stow pipe cleaning tools, domestic and industrial. All lengths. Patented. No competition. Nothing like it. No limit to opportunity. Sells on sight. Barber shops, soda fountains, restaurants, office buildings, apartment houses, factories. Write for proposition. STOW MANUFACTURING CO., Binghamton, N. Y.

SALESMEN — EXPERIENCED IN selling a complete line of exclusively high grade plumbing brass goods direct to plumbing contractors. Applicants must own and drive auto and be thoroughly established in territory for which they apply. Give full particulars in application with references, experience, etc. Commission with drawing account after ability has been proved. THE VICTOR BRASS MFG. CO., Cleveland, Ohio.

UNUSUAL SALES OPPORTUNITY

Old established New England Manufacturer has few territories still open. Have representatives in New York, Chicago, Pittsburgh, Philadelphia, Hartford, Kansas City and Oklahoma City. Product revolutionary advance in heat control field. Ready sale to industrial and office buildings, homes, etc. If financially responsible, and interested in having business of own with unlimited possibilities, secure full information. Address Key 400, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

SALESMEN—WITH GOOD PERSONality to sell to plumbers. Splendid opening for conscientious hustler. State experience and past connections which will be held confidential. Address Key 397, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

WANTED: SALESMAN TO REPRESENT us on complete line of boilers, radiators, furnaces and specialties. Address International Heater Company, 101 Park Avenue, Utica, New York.

WANTED — A FULL TIME SECRETary to work in an Ohio city of 200,000 population. State experience and salary desired. Address Key 401, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

WANTED LIVE SALESMEN CALLING directly on plumbing contractors. We will extend fullest cooperation in advertising and sales promotion work. Exclusive territories. State experience and give references. General Manager, Geneva Heater Company, Geneva, Illinois.

REPRESENTATIVES WANTED IN leading cities to handle highest grade line of radiator shields and radiator cabinets. Our representatives earn $500.00 to $1,000.00 per month the year around, above expenses. Full selling plan furnished. **Address Key 256, "Domestic Engineering," 1900 Prairie Ave., Chicago.**

Situations Wanted

FIRST CLASS PLUMBER DESIRES position. 15 years' experience on first class work. Sober, reliable, will go anywhere. References given. Address Key 399, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

Lines to Handle

WONDERFUL MONEY-MAKING SIDEline or exclusive proposition for salesman calling regularly and direct on plumbing dealers. Communications strictly confidential. KOIL-LES HEATER COMPANY, Geneva, Illinois.

WANTED: MANUFACTURERS' agency to handle brass line to Jobbers and Potteries in Philadelphia and New Jersey. Address Key 396, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

WE WANT ESTABLISHED MANUfacturers' Agents who call on the legitimate jobbers and architects to sell the Fuller Adjustable Radiator Hanger; straight commission basis; several productive territories now open; full protection; active sales and advertising support. F. W. FULLER & CO., St. Paul, Minn.

For Sale

FOR SALE—POWER DRIVES, AC & DC, and stocks and cutters slightly used, that we have no work for. Excellent tools and guaranteed. Address Key 394, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

Books for Your Trade Library

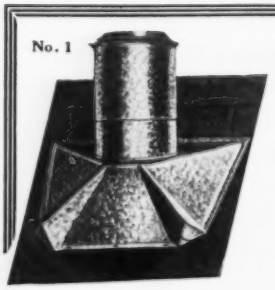
THE TABLE OF ESTIMATED RADIATION. By Harry B. Perrigo. Gives the accurate amount of radiation required for any size room. Computed from standard recognized rules and simplified to a degree that makes it readily understood by any man with even a limited knowledge of heating. Two tables—one for steam and the other for water—are printed in two colors on heavy celluloid—making four pages in all. Substantially bound. Size 4½x7¼ in. Saves time and eliminates errors. Price, postpaid, $1.00.

OVERHEAD EXPENSE AND PERCENTAGE METHODS. By Henry F. Baillet. Master plumbers and steamfitters are realizing more and more the importance of including their overhead expense as a part of each contract. It is the only sure way of showing the correct margin of profit on business handled for the year. In compiling this book, Mr. Baillet has used data taken from actual business experience. Shows how to figure properly the cost of doing business and the correct percentage of profit on any contract. A book worth many times its cost. Size, 4½x7 in. 128 pages. 24 tables. Cloth. Price, $1.50.

JOHNSON'S HANDY MANUAL ON HEATING, VENTILATING AND REFRIGERATION. By John W. Johnson. The author is a practical plumbing and heating man, having spent many years in workshops and has superintended the installation of plumbing and heating systems of all descriptions. Thirteen editions of this popular book have been exhausted. The fourteenth is just off the press. Size 4x6¾. Cloth. Price, $1.50 per volume.

MERCHANDISING THE PLUMBING BUSINESS. By Karl W. Zoeller. A treatise on merchandising as applied to the plumbing and heating business, that should be read by every plumber, contractor or jobbing plumber. The subject is completely covered by the twenty-six chapters, and in a manner making it interesting and easy to read. It contains many valuable suggestions on Window Display, Showrooms, Advertising, etc. No matter how large or small your business, you need this book. Size 4½x6¾ inches. Over 100 pages. Price, postpaid, $1.50.

No. 1



F. J. MOORE
216 18th Ave., N.,
Minneapolis, Minn.

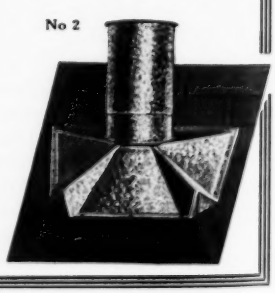
They Cover the Entire Stack

One of these two Moore Roof Flashings will fit every flashing requirement in the country. Both meet all plumbing ordinances and both cover the entire stack. No. 1 has a one-inch air space between stack and flashing which eliminates freezing damage. No. 2, for use in milder climates, fits close to the stack.

Both Moore Roof Flashings have instantiy adjustable collars which add greatly to the appearance of the roofs on which they are used. Your jobber can supply you or write direct.

Made in Copper or Cop-R-Loy Metal

No 2



ADVERTISING

Cash must accompany order. Copy should reach us eight days in advance of publication date.

STANDARD PRACTICAL PLUMBING. By R. M. Starbuck. Eighth revised and enlarged edition. An exhaustive treatise on all branches of plumbing construction, including drainage and venting, ventilation, hot and cold water supply and circulation. Shows the latest and best plumbing practice, special attention being given to the skilled work of the plumber and to the theory underlying plumbing devices and operations. Contains 347 original illustrations, each drawn expressly for this work. A book every master plumber should have in his trade library. Size, 6x9 in. 406 pages, bound in cloth. Price $4.00.

SANITARY SEWERAGE OF BUILDINGS. By Thomas S. Ainge. Beginning with a study of outside sewers, this book goes fully into the best practice in inside connections, proper location and size of soil waste, and vent pipes and the roughing-in test up to the filling in of the trenches. 40 pages are devoted to the important subject of traps. Sewage disposal for country homes is also given full consideration. Size 5½x8 in. 200 pages. Cloth. Price, $1.50.

PRACTICE AND THEORY OF SANITARY PLUMBING. By R. M. Starbuck. Vol. I. Contains 400 questions with complete and comprehensive answers, covering everything the plumber should know regarding drainage and latest requirements in plumbing practice. Explains technical terms, gives rules and tables and is fully illustrated. So popular has this book become that the 12th edition has been published. The combined set of four volumes makes a complete preparation for Board and Health and union examinations. Size 6x9 in. Cloth. Price $2.00 per volume, or $7.00 for the four volumes.

PRACTICAL STEAM AND HOT WATER HEATING AND VENTILATING. By Alfred G. King. This book should be in every steamfitter's library. A strictly up-to-date work, describing various systems of heating and ventilation. Besides the technical features, it contains hints on securing contracts, business methods, shop practice, rules and data for estimating radiation and figuring costs, and other tables and suggestions that are time savers. Size, 6x9 in. 368 pages, 300 detailed illustrations. Cloth. Price, $4.00.

A PRACTICAL MANUAL OF STEAM, Vapor and Hot Water Heating. By E. R. Pierce. The latest and most complete document ever compiled covering the construction, operation, installation, etc., of these types of heating. A real necessity in the library of the heating man. Contains more than 50 heating tables and 60 illustrations, all up to date and helpful in the solution of your heating problems. Size 5½x8½ in., 316 pages. Cloth. Price, $3.00 postpaid.

Domestic Engineering
Books Sent Parcel Post Prepaid
1900 Prairie Avenue, Chicago

Miscellaneous

Plumbers' Bin Labels

for Wood or Steel Bins

are like a VISIBLE OPEN CATALOG spread wide open on the stock bins to teach the stock boys and apprentices to know their goods.

Hadco Illustrated Bin Markers for Water, Gas and Steam Fittings, with pictures of the fittings, the sizes and proper names save time putting fittings away or getting out stock for orders, and teach your apprentice boys the proper names of the fittings they use.

Send for samples and prices of card holders, bin labels and stop valve tags, and free booklets: "How to Lay Out the Plumbing Shop" and "How to Train the Apprentice Boys." Haddon Bin Label Co., Haddon Heights, N. J.

The Most Reliable
PIPE COUPLING BUYERS
in The Country

Write us about your surplus pipe couplings.

CAPITOL MFG. & SUPPLY CO.
550 Nicholas St., Columbus, O.

PORTABLE PIPE MACHINES
LIKE NEW—Used on one job

6-in. Oster Pipe Machine, mounted on 4-wheel truck and driven with a gasoline engine.

4-in Oster Pipe Machine, mounted on 4-wheel truck and driven with a gasoline engine.

2, 3-in. Oster Pipe Machines, mounted on 4-whee truck and driven with a gasoline engine.

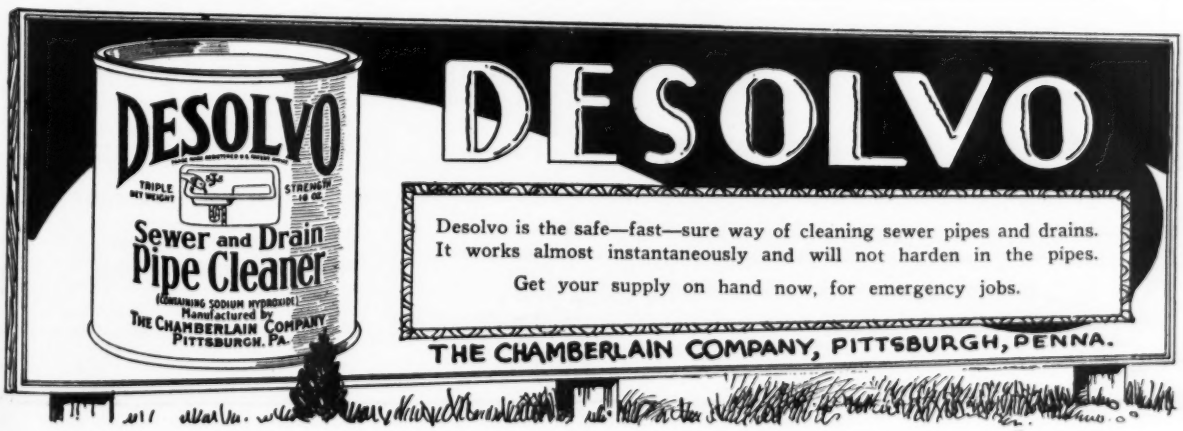
THE O'BRIEN MACHINERY COMPANY
113 North Third St. Philadelphia, Pa.
Long Distance Telephone: Market 0727
Cable Address: "OBRIEN" PHILADELPHIA

STOP "GUESSTIMATING"
Avoid Errors and Omissions. Our
Plumbers' Estimate Sheets
will SAVE Time and Money.
100 leaves in a book—4½x10,
1 Book, $1.25 5 Books, $5.
via Ins. Parcel Post same day we get order.
LOUIS FINK & SONS CO., Printers.
Time Sheets, Job Tickets, Letter Heads, etc.
School Bldg., Laurel Springs, N. J.
In Business Thirty Years. Noted for Quick Service

Use These Pages To Get What You Want

If you are looking for competent employes; or if you contemplate a change in position, have a patent for sale; wish to purchase or sell a plumbing and heating business; second-hand machinery or tools; form a co-partnership, etc., your advertisement on this page will put you in touch with the people you desire to reach.

The cost of insertion is only eight cents a word and may mean many dollars to you.


DESOLVO
TRIPLE NET WEIGHT
STRENGTH 10 OZ.
Sewer and Drain
Pipe Cleaner
(CONTAINING SODIUM HYDROXIDE)
Manufactured by
THE CHAMBERLAIN COMPANY
PITTSBURGH, PA.
DESOLVO
Desolvo is the safe—fast—sure way of cleaning sewer pipes and drains.
It works almost instantaneously and will not harden in the pipes.
Get your supply on hand now, for emergency jobs.
THE CHAMBERLAIN COMPANY, PITTSBURGH, PENNA.

Index to Advertisers

September 7, 1929

Air Reduction Sales Co....132
Air-Tight Steel Tank Co..185
Alabama Pipe Co..... 17
Alamo Engine Co.....134
Alberene Stone Co..... 89
American Radiator Co....
..... 87 and 100
American Sanitary Mfg. Co. 127
Armstrong Bros. Tool Co..121
Artisan Metal Products Co.201
Automatic Gas Steam Radiator Co. 194

Badger & Sons Co., E. B...154
Ballantine, B. D.....193
Bastian-Blessing Co., The.166
Beaton & Cadwell Mfg. Co. 94
Bell & Gossett Co..... 95
Benson Co., Inc., Alex R..201
Bignall & Keeler Machine Works 179
Borden Co. .....14 and 15
Bridgeport Brass Co..... 40
Brunswick-Balke-Collender Co. 92
Bryan Steam Corp.....172
Bullard Specialty Co.....173
Burnham Boiler Corp..... 91
Butler Mfg. Co.....129

Capitol Brass Division of Bohn Aluminum & Brass Corp. 88
Carty & Moore Eng. Co...118
Case & Son Mfg. Co., W. A. 99
Cash Valve Mfg. Corp., A. W. 180
Central Brass Mfg. Co.... 86
Chamberlain Co., The....205
Chemical Toilet Corp.....90
Chevrolet Motor Co..... 43
Chicago Faucet Co..... 83
Chicago Pump Co.....160
Cleghorn Co. 183
Cleveland Gas Burner & Appliance Co. 105
Cohoes Rolling Mill Co...120
Columbia Radiator Co....170
Compound Injector & Specialty Co. 108
Connors Paint Mfg. Co., Wm. 195
Corcoran Mfg. Co.....163
Crampton-Farley Brass Co.185
Crane Co. 93
Crest Mfg. Co. Inc.....185
Crist & Schilken Co.....175
C. S. B. Sprinkler Co.....183
Curtin Valve Co., A. F..... 95

Dart Mfg. Co., E. M.....110
Decatur Pump Co.....169
Dececo Co. 174
Delco Light Co.....202
Deming Co., The..... 89
Detroit Torch & Mfg. Co.199
Dole Valve Co.....124
Domestic Stoker Co.....181
Donnelly Mfg. Co.....169
Dube Boiler Works.....164
Dunham Co. 203
Duo-Tor Mfg. Co.....185
Duriron Co. 171
Duro Co. 90

Eagle-Picher Lead Co.... 90
Ebinger Sanitary Mfg. Co.189
Economy Pumping Machinery Co. 36
Enterprise Brass Works..191
EverHot Heater Co..... 7
Excelso Products Corp....
.....24 and 25

Fitzgibbons Boiler Co., Inc. 22
Flagg & Co., Stanley G... 90
Fretz-Moon Tube Co.....179
Fulton-Sylphon Co., The.. 95

General Motors Truck Co..161
Gerstein & Cooper Co....176
Gorton Heating Corp.....203
Goulds Pumps, Inc..... 26
Grabler Mfg. Co..... 32
Grand Haven Brass Foundry 188
Greenfield Tap and Die Corp. 33

Haas Co., Inc., The Philip.109
Hanson Scale Co.....193
Hayes Mfg. Co.....193
Hays Mfg. Co.....71 and 72
Healy-Ruff Co. 110
Heggie-Simplex Boiler Co 89
Hindley Mfg. Co.....203
Hoffman Specialty Co.....207
Hoffmann & Billings Mfg. Co. 101
Hotel Gibson 199
Hotstream Heater Co..... 11
Hutchison Regulator Sales Corp. 173

Illinois Malleable Iron Co.134
Indiana Brass Co.....117
International Nickel Co... 96

Janette Mfg. Co.....159
Jarecki Mfg. Co.....126
Jenkins Bros. 8
Jenkins Mfg. Co.....
.....Inside Back Cover
Johnson-Washburn Co. ...195
Johnston Bros., Inc.....143
Jones Hollow Ware Co....129

Kainer & Co..... 18
Kaustine Co. Inc.....117
Kennedy Valve Mfg. Co...102
Kewanee Boiler Corp.....
.....Inside Front Cover
Kewanee Private Utilities Co. 196
Kieley & Mueller, Inc.....201
Knight, Maurice A.....198
Kohler Co. 28
Koven & Bro. Inc., L. O.. 9

Lavelle Rubber Co.....165
Lavin & Sons, R.....201
Leonard-Rooke Co.....184
Little Giant Mfg. Co.....195
Little Mfg. Co., M. S.....125
Lynchburg Foundry Co...115

Maddock's Sons Co., Thos.105
Malleable Iron Fittings Co.114
McAlear Mfg. Co.....160
McDonnell & Miller.....97
McQuay Radiator Co..... 37
McShane Bell Foundry Co.170
Milwaukee Flush Valve Co. 89
Minneapolis-Honeywell Regulator Co. 128
Modine Mfg. Co.....16
Monitor Boiler Corp..... 29
Moore, F. J. 204
Motor Wheel Corp..... 27
Mueller Brass Co.....136
Mueller Co. 38
Murphy Door Bed Co..... 23
Myers & Bro. Co., F. E....155

Nash Engineering Co.....
.....111 and 112
Nason Mfg. Co.....193
National Radiator Co.....197
National Regulator Co.....98
National Tube Co..... 39
National Water Lift Co...110
Nelson Corp., Herman..... 19
Neptune Meter Co.....140
Newport Boiler Co.....190
New York Air Valve Corp.184
Northern Indiana Brass Co.170
Novelty Steam Boiler Wks.110
Nye Tool & Machine Wks. 13

Oakland Foundry Co.....191
Ohio Brass Co.....135
Ohio Heater Co.....105
Oxweld Acetylene Co.....104

Palley Mfg. Co.....139
Patterson-Kelley Co. 188
Peerless Machine Co.....101
Penna. Range Boiler Co..113
Phoenix Brass Fittings Corp. 153
Powers Regulator Co..... 30

Ray Burner Co.....200
Richmond Fdy. & Mfg. Co.108
Richmond Radiator Co....
.....106 and 107
Riverside Boiler Works...137
Robertshaw Thermostat Co. 133
Robbins-Gamwell & Co...196
Rochester Circulator Co...182
Rome Brass Radiator Corp. 80

Sarco Co., Inc.....194
Sheer Co., H. M...130 and 131
Sherwood Brass Works... 93
Simplex Mfg. Co.....170
Sloan Valve Co.....144
Smooth-On Mfg. Co.....105
Speakman Co. 10
Spencer Heater Co..... 95
Stack Heater Co.....129
Standard Sanitary Mfg. Co.100
Standard Tank & Seat Co.
.....122 and 123
Stockham Pipe & Fittings Co. 117
Street & Kent Mfg. Co....118
Stringer Bros. Co., Inc.... 17

Taber Pump Co.....129
Thermal Units Co...20 and 21
Thomas & Armstrong Co..187
Time-O-Stat Controls Co..177
Toledo Pipe Threading Machine Co. 44
Trane Co., The..... 75
Trenton Brass & Machine Co. 165
Trimont Mfg. Co..... 34
Trupar Mfg. Co.....117

United-Oberndorf Corp. ..103
United States Rubber Co...35
U. S. Stoneware Co.....195

Vanderman Mfg. Co.....197
Vogel Co., Jos. A...3 and 208

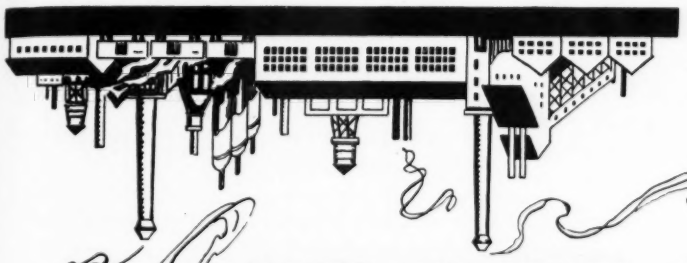
Wade Iron Sanitary Mfg. Co. 173
Walworth Co. 78
Ware Coupling & Nipple Co. 174
Warnock Mfg. Co.....173
Warren Webster & Co.... 31
Watts Regulator Co.....156
Wessels & Sons Co., D. D.126
Williams & Co., J. H..... 12
Wise, Inc., J. B.....119
Wolff Co. 84
Wolverine Brass Works.. 5
Wood Conversion Co..... 41
Woodward-Wanger Co. ...141

"X" Laboratories..Back Cover

York Heating & Ventilating Corp. 113
Youngstown Sheet & Tube Co. 116

Zurn Mfg. Co., J. A.....138

FACTORIES



that are UPSIDE DOWN...

ALL over the country there are countless factories that—from a heating standpoint—are upside down. Warm air is banked up under the ceiling, above the workers' heads, while employees blow their fingers and shiver at their work. And fuel bills are excessively and unnecessarily high.

Attractive profits await the heating contractor who shows these plant owners the new way to generate heat over the heads of the workers and distribute it below.

Hoffman Moto-Heaters offer you a product with which to build a profitable business in industrial and commercial heating. Hoffman Moto-Heaters are an improved type of unit heater that provides maximum efficiency at lowest cost per B.T.U.

They furnish uniform and quick distribution of heat and insure dependable and trouble-proof service under all conditions—both normal and difficult. Hoffman Moto-Heaters are made in suspended and floor mounted styles, in a complete range of sizes for all requirements. Write for catalogue and full information.

Outstanding Advantages of Hoffman Moto-Heaters

1. **Light in weight.**
2. **Tested at 1000 pounds per sq. in. hydrostatic pressure.**
3. **All types guaranteed for working pressures up to 200 lbs.**
4. **Permanently steam tight joints. Copper tubes fused to welded steel header—no expanded joints.**
5. **Smooth fins, reducing against collection of dirt.**
6. **Fins embedded in copper tubing, insuring efficient heat transfer.**
7. **Low in first cost and installation cost.**

Have You Received a Copy of the New Hoffman-Economy Pump Catalog?

Hoffman-Economy Vacuum and Condensation Pumps are made in a complete range of styles and sizes, for all types of installations where a dependable unit is required for the acceleration of circulation at low pressure or returning condensate to the boiler. Catalogue will gladly be sent upon request.

HOFFMAN SPECIALTY COMPANY, INC.
Dept. X-14, Waterbury, Conn.
Please send catalogue on
_____Hoffman Moto-Heaters
_____Hoffman-Economy Pumps.

Name.....

Street.....

City..... *State*.....

By.....

Before we begin to think about cold weather —

Why not put in as many VOGEL Frost-Proofs as possible?

Tell your customers who are going to put in frost-proof closets that VOGELS can be installed quicker and better now than later.

There are now 500,000 VOGEL Frost-Proof Closets in use and they never give the slightest bit of trouble. They never need repairing and apparently they'll never wear out.

If you want stickers, folders, or any VOGEL direct-by-mail help, tell us how many—we'll imprint your name and address.

Coldie and Frostie Turn Weather Prophets

Said Coldie to Frostie
"You may think it's rot
"To mention next winter
"With weather so hot."

"But from all indications
"I'm willing to guess
"That the temperature falls
"To zero or less."

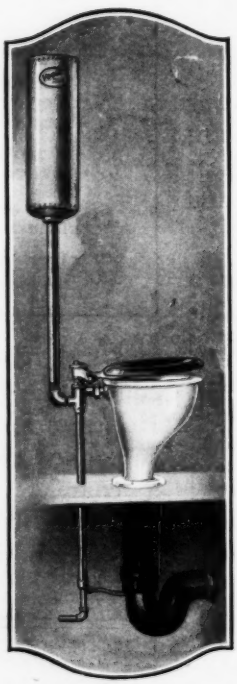
"With good long stretches
"Of real cold weather
"When plumbing and pipes
"Will all break together."

"So why should I work
"On inventions and such,
"When none of them ever
"Amounted to much?"

"But it still is a fact
"That Vogels are tough
"To break them it never
"Gets quite cold enough."

"While others are cracking
"And breaking in two
"A Vogel's as good
"As the day it was new."

"If just one Vogel
"We'd manage to crack
"I'd be willing to quit
"And never come back."



Number One Vogel Frost-Proof Closet. Simple in operation. Sturdy in construction. Half a million in operation.

JOSEPH A. VOGEL COMPANY
Wilmington, Del. St. Louis, Mo.

See inside front page for VOGEL SELFLUSH Number Ten advertisement.

Vogel Frost-Proof Hydrant
Install it in garages.

VOGEL PATENTED *Frost-Proof Products*